

Issue 25 • Apr 29 1989

Only  
48p!

Comms and networking guide - page 30

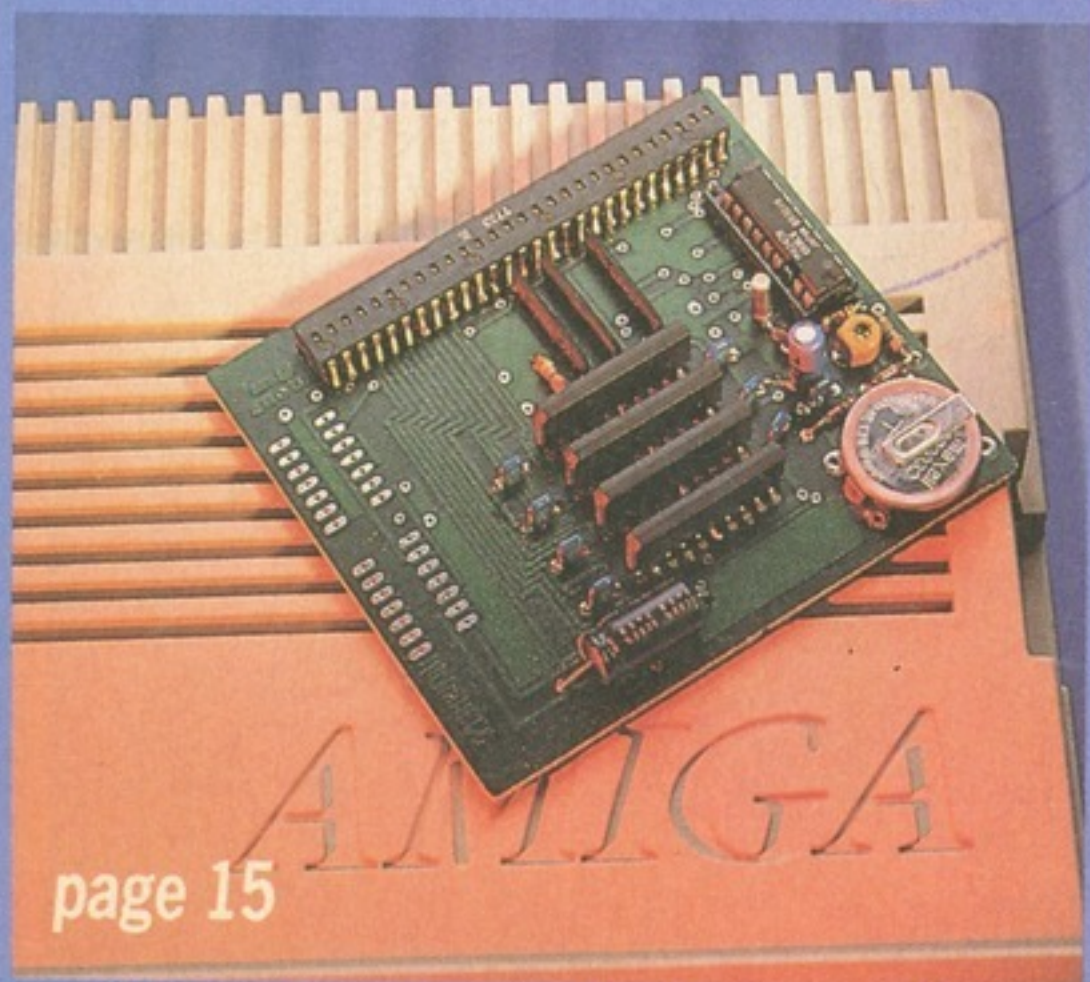
# NEW COMPUTER EXPRESS

First news, first reviews - every week

SOMETHING WONDERFUL

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of the Amiga page 19

## Power up!



page 15

The best and cheapest  
upgrade for your machine

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Your no nonsense guide  
to the world of  
computing

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# HOW I'LL SMASH THOSE HACKERS

"Jail them  
for 10  
years"

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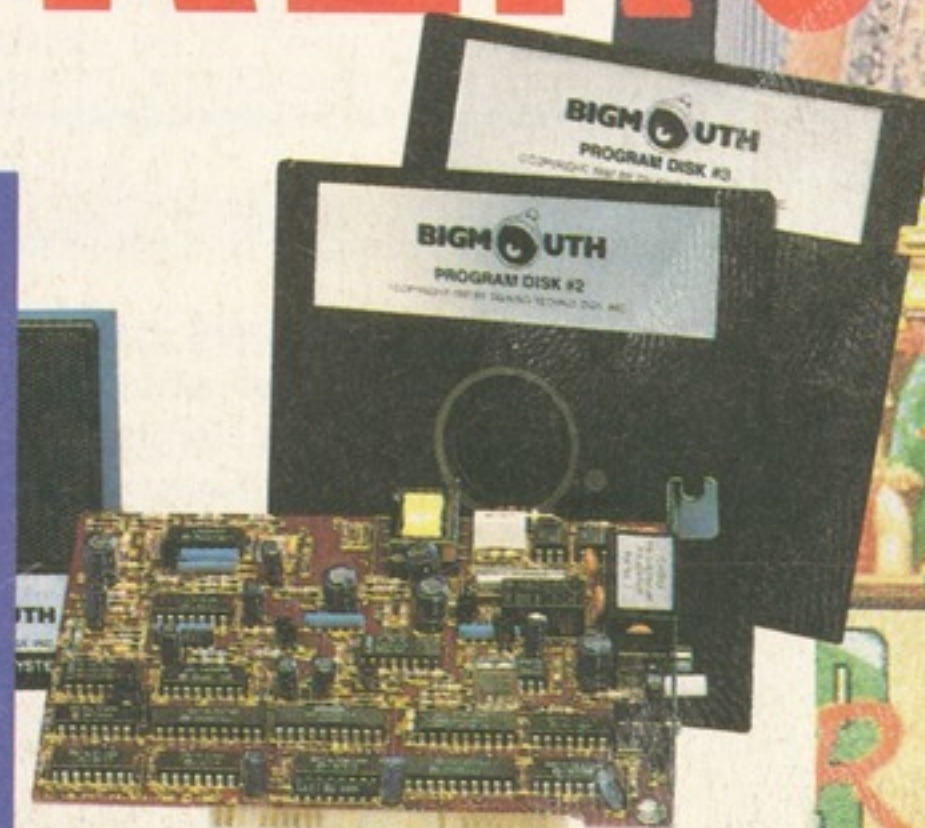
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Anti-hacking MP warns of stiff penalties

# HACKERS FACE TEN YEAR PRISON STRETCH

**"We must succeed. Hacking is a real threat to personal liberty and privacy."**

Hackers face up to ten years in jail, if a leading Tory MP has her way.

In an interview with *Express* anti-hacking MP Emma Nicholson has told of her plans to outlaw the hackers and the stiff penalties she wants to impose. She warned that people could be killed as a result of hacking.

Nicholson last week presented her case to the Commons and is being supported by both sides of the House. It is looking increasingly probable that she will succeed in

passing the Private Members Bill.

This week she will be giving a dossier to the Prime Minister outlining a number of disturbing cases of hacking and the reasons to outlaw the increasingly popular practice.

"I will propose that we outlaw computer hacking and that it is treated as a serious matter within the legal system," she told *Express*. "I have suggested that a bad case of hacking carry a ten year jail sentence."

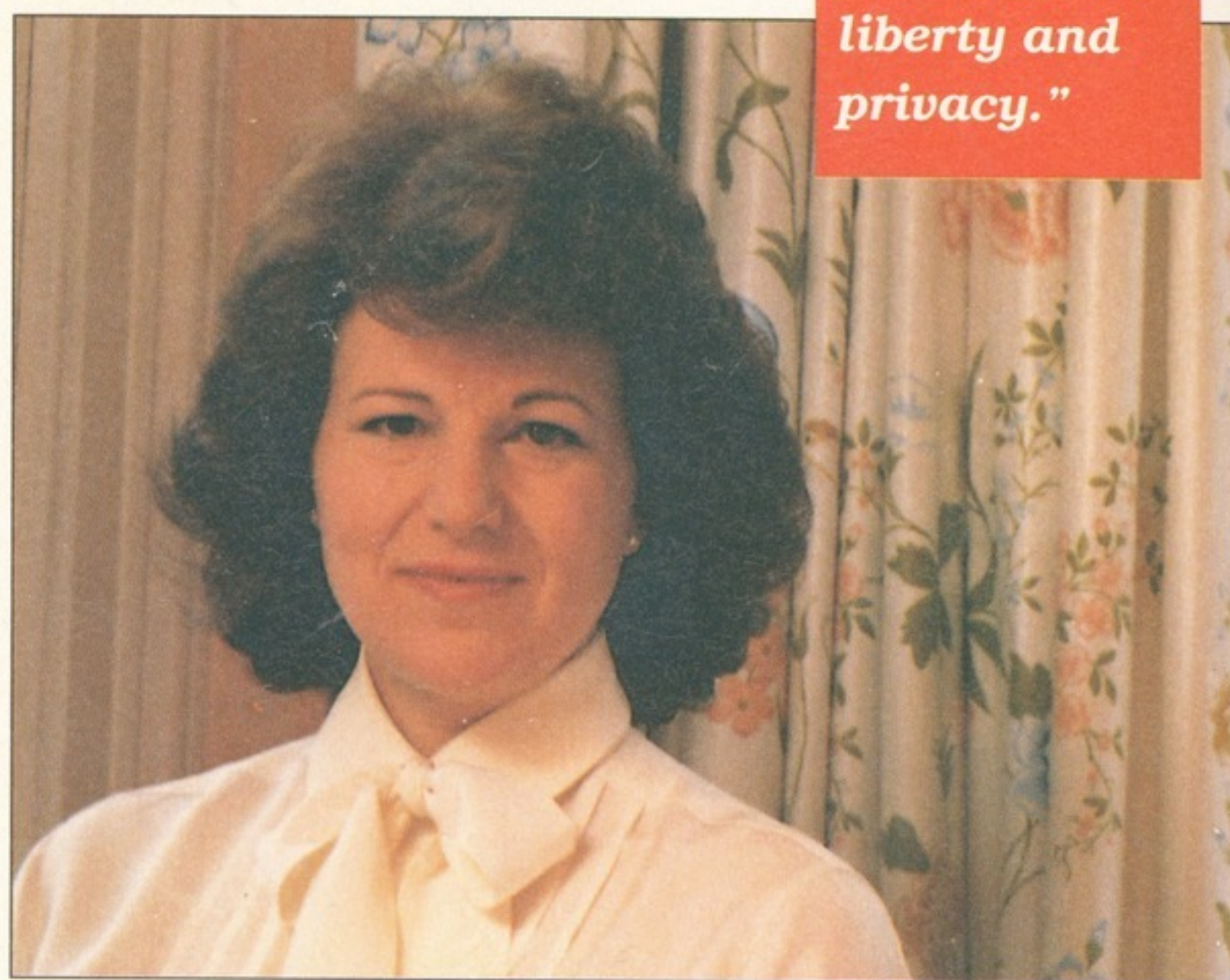
"We must succeed. Hacking is a real threat to personal liberty and privacy."

Hackers can currently be prosecuted under normal laws if they tamper with information or commit fraud. However, no single law adequately covers the separate matter of hacking.

The Law Commission is currently studying the phenomenon but that report, claimed Nicholson, will not be finished this year. She warned that changing the law through this channel could take three years.

"Hacking is very serious and so the sentences must be hefty. People can be killed as a result of it," she said. "People want to go to the doctors and know that the information will be kept private. No one wants their medical records sprayed all over the streets."

"I don't want to do this in a 1984 sort of way, if you understand what I mean. It's just for the sake of normal peace of mind and natural privacy. There's no need to be excessive but



Cracking down on hacking: Tory MP Emma Nicholson wants it made a criminal offence

it's crucial that I succeed."

Nicholson - MP for West Devon and Torridge - has been working with computers since 1961 when she joined ICL as a programmer.

The Labour party is supporting her Bill. Its spokesman for science and technology Jeremy Bray told *Express*: "The problem of hacking needs legislation although I would prefer not to comment on the recommended sentences."

Meanwhile, the bulletin boards were last week buzzing with rumours and speculation on the

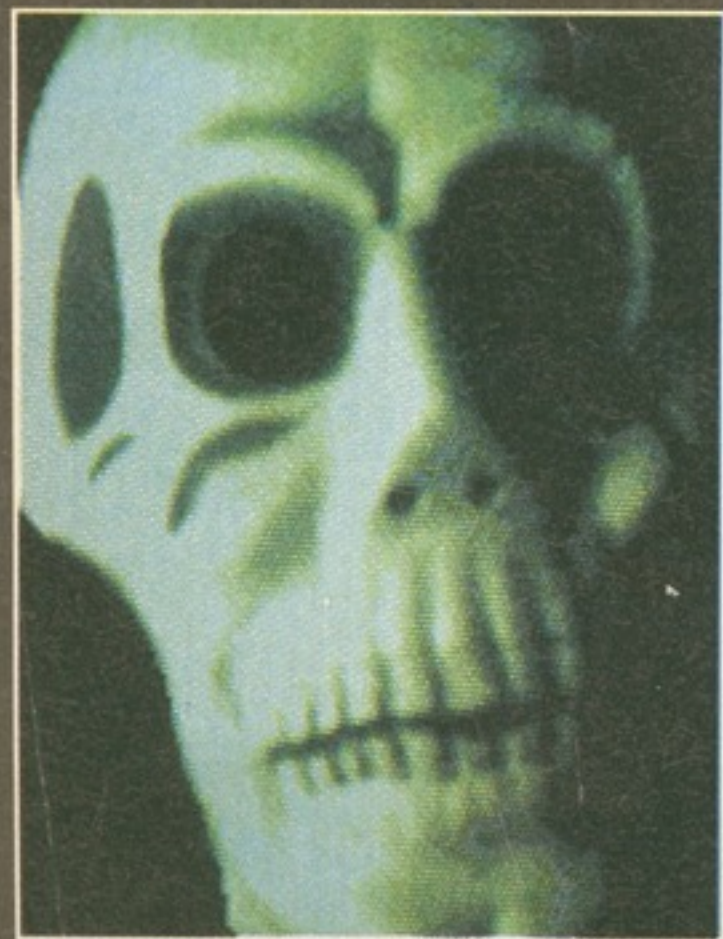
latest anti-hacking crackdown. One which sent shockwaves through the community was that Nicholson will propose a £1,000 licence fee for all modem owners. She responded: "That is absolutely untrue. I would never support making computing more expensive than it already is. It's a crazy idea."

Nonetheless, some bulletin boards are prepared for the worst. One complained to *Express*: "We need to know the exact wording here. If the wording is wrong then it would be very bad. Where will it stop?"

## Ripping yarns

After last year's nationwide public and media uproar and condemnation over its tasteless horror game, *Jack The Ripper*, CRL is due to launch this infamous release on ST and Amiga next month.

Already out on Spectrum, C64 and CPC, *Jack the Ripper* is a standard text/graphic adventure, "enhanced" by digitised screens showing mutilated and dead women. Those of you interested in loading up such fare can find out more on 01 533 2918.



• One of the less unpleasant shots from *Jack the Ripper*

## Cheap and cheerful 286

PC buyers have a new low-cost option as yet another hardware manufacturer brings out a new AT touted as being priced like an XT.

Viglen's 286 AT will cost £896. A colour EGA model weighs in at just under £1,000. Viglen says potential PC owners need skip over low end XT computing and go straight for a 286.

The VIG I Plus runs at 8/10 MHz with the standard model boasting a 30Mg hard disk, 640K RAM and 360K floppy. This continues a growing trend of 286 technology breaking the £1,000 price barrier.



• VIG I: 286 price breaker



# HOW I LOST £37 MILLION IN A DAY



## Sugar's bad day at the office

• Millions lost – but plenty left for Sugar

Amstrad boss Alan Sugar saw almost £37 million wiped off his personal fortune during the space of one day last week.

Last Thursday some £120 million was wiped off the stock market value of Amstrad – Sugar owns 45 per cent of the company. Shares took a dive of 21.5 pence effectively lopping 15 per cent off the firm's value.

The disastrous day's trading followed gloomy predictions from Sugar himself that year end profits would be down.

Market analysts immediately readjusted their predictions for the

firms next financial results in September from £130 million to £110 million.

All this is as a direct result of the appalling shortages and delays of Sugar's 24 strong range of new high end PC2000s. Amstrad has been dogged by delays caused by the DRAM chip shortage and technical hitches such as the hard disk faults (Express 23).

Amstrad had introduced the PC2000s last September and has been running ads for months. However, anyone rushing out to pick up a machine has been frustrated as

deliveries have been postponed. Indeed, only now are the machines arriving in any noteworthy numbers.

All these problems prompted Sugar to warn that profits would be below expectations. This follows Amstrad's first ever dip in profits in February when half year figures were down 16 per cent on last year.

The company has long been computing's golden boy and a shining example of Britain's much played upon new entrepreneurial spirit. Sugar's predictions have left the company's City position in a poorer state.

But don't expect to see Alan at the dole office. The losses aren't in real cash – only on paper. If Amstrad manages to ship adequate batches of the 2000 series into the UK a healthy upturn can be expected.

## A HARD AND FLOPPY BARGAIN

ST and Amiga owners wanting to tap the power of a hard disk, now have another deck to choose from thanks to Power Computing.

Power's Triangle Turbo 3 hard disks come in either 20Mb, 40Mb, 80Mb or 100Mb versions, with

prices starting at £399 ST and £499 Amiga.

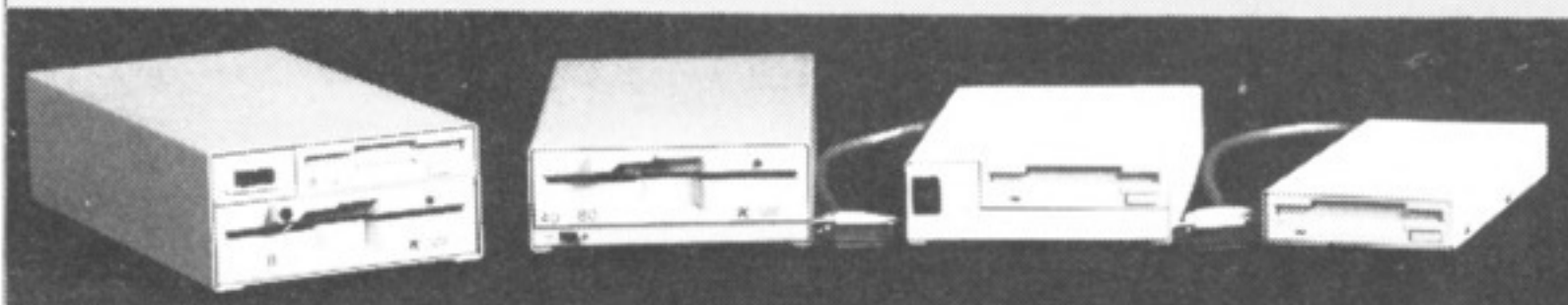
Power also has a new range of floppy disk drives for the ST and Amiga.

Triangle Elite drives feature on-off switches and track counters, and cost £129.95 ST, £119 Amiga.

Also on the floppy front is a

3.5"/5.25" multi-drive for the Amiga, with twin track counters, isolation switches and 40/80 track switches, for a price of £249.

Anybody who doesn't know their hard disks from their floppy drives, can find out more information from Express issue 22.



## Incentive's mail order incentive

Fans of Incentive's Total Eclipse can now buy a sequel – but only if you're part of the Home Computer Club.

Total Eclipse II – The Sphinx Jinx was specially commissioned for W H Smiths mail order outfit the Home Computer Club. It comes with the original for £11.20 on the big three 8-bit machines.

## Computer North Show takes historical angle

Information hungry computer buffs are being invited to the Computer North Exhibition in June for a "unique" line up of old and new computers.

Organiser Cahnners is to stage a history of computing section touted as a high tech museum. On display will be bits and pieces from early computers as well as rare photographs depicting the development of the world's earliest computers just after World War II.

The museum will trace early developments such as the Mark 1 and Abacus in the 1940s and 50s through the fast development of the next two decades.

Computer North will be held at the G-Mex Centre in Manchester from June 6th

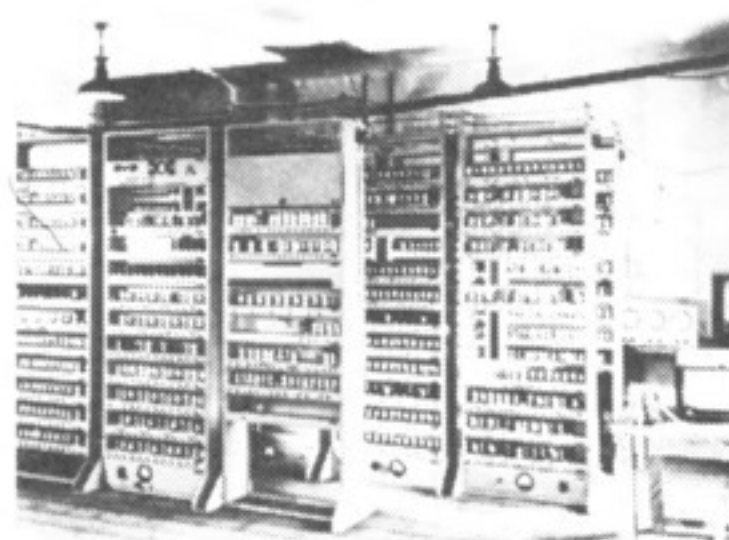
until the 8th. Cahnners reckons this is the North's biggest computer show.

Some 100 exhibitors will be setting up shop including Amstrad, Olivetti, Logitech and a variety of Northern firms. This, the third such show, is expected to attract 7,000 visitors.

"The history of computing section will be fascinating," said organiser Karen Phillips. "We want to focus on all that is relevant. You couldn't see it anywhere else. Some of these computers were as big as a board room but couldn't do much more than a modern hand held calculator." Phillips has borrowed artifacts from computer societies as well as various universities. Board room size computers – for obvious reasons – will

not be on display. Key components are promised.

Anyone turning up on the door will be charged £3.00 although free tickets are available on 0792 792792.



• High tech 1940s style

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**COMPUTER EXPRESS**  
**COMMENT**

**HACK ATTACK**

Illegal accessing of other people's computer data - hacking - seems sure to be made a criminal offence, punishable by up to ten years in prison. For everyone who stores sensitive information on their computer, the question is, how easily can hackers be caught?

The answer is, more easily than you might think. Indeed the problem up to now has not been catching or identifying hackers, but stopping them. After all, they weren't doing anything wrong, as in the famous case where two hackers broke into The Duke of Edinburgh's mailbox and examined his personal letters - all quite legally.

The police can use the same methods of tracking down hackers as they do to catch burglars: tracing back of the stolen items, tip-offs, examination of passwords used and times of entry, real time tracing, and inspired guesswork.

As *Express* has stated before, much of the onus is in fact on the computer owners themselves to tighten up their own security, perhaps employ data 'security guards' as they do guard dogs and patrolling services. Like the determined thief, the determined hacker will plug away whatever you do to stop them; but at least the police would be able to do something about it when they catch them.

The worry is that the innocent peeper who's first to be caught gets a ten year 'exemplary' sentence from some technophobic judge. The ten year sentence must be used as a maximum, to deter, and reserved for the real criminal intent on stealing information.

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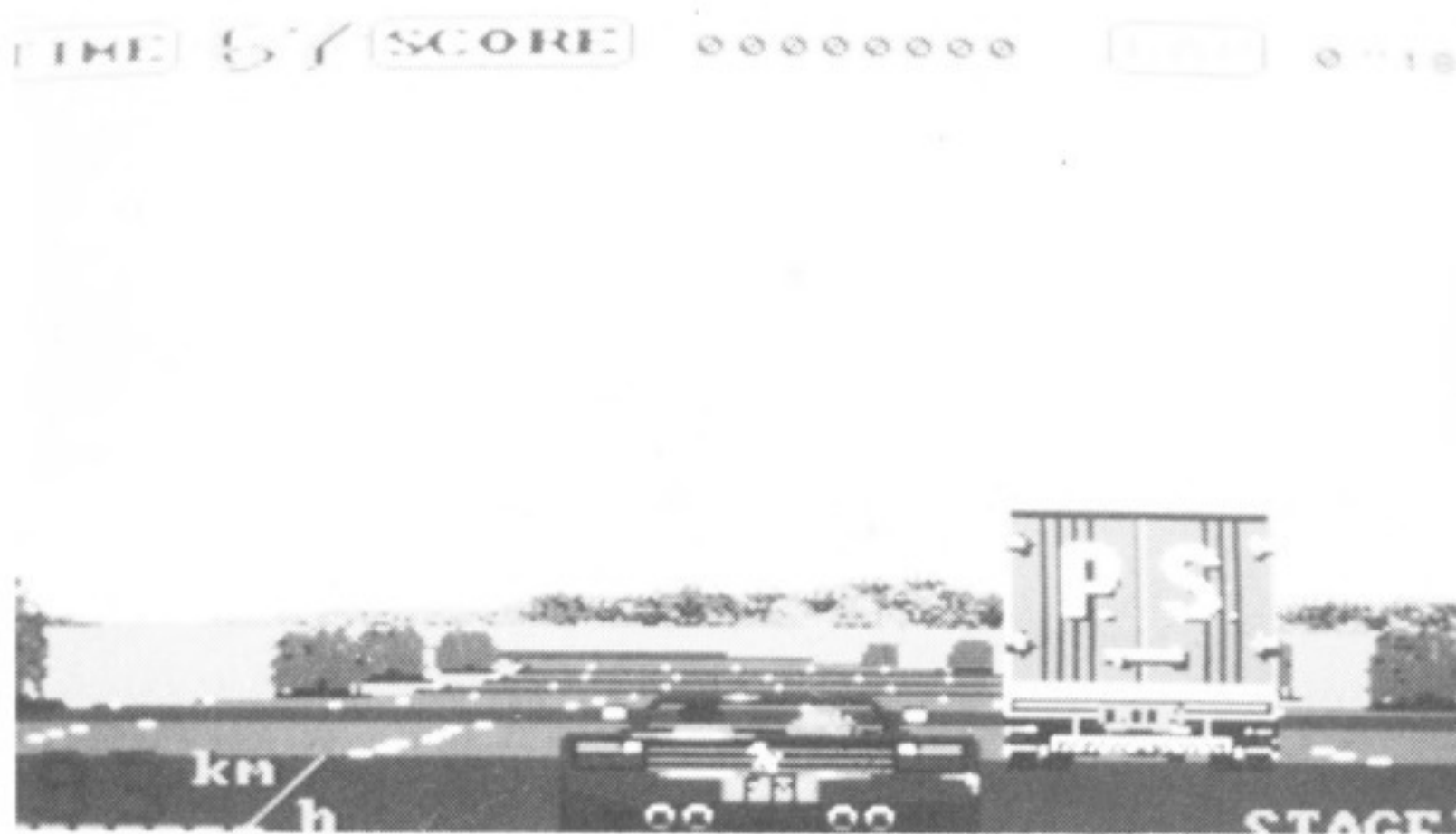
# US BOLD

## Daring low prices for 16-bit Gold titles

Top games software company US Gold has good news for 16-bit gamers this week with the launch of a new budget label.

Klassix is the 16-bit counterpart to the popular 8-bit budget label, Kixx - with Klassix games priced at £9.99 on ST, Amiga and PC. Gold is promising a line up of top favourites on the leading edge machines.

First games to be re-released on the Klassix label consist of the well known Sega racing-sim coin-op *Out Run* (ST, Amiga), classic golfing simulation fun from *World Class Leaderboard* (ST, Amiga, PC) and a vertically-scrolling shoot'em-up *Foundations Waste* (ST, Amiga) by Exocet Software. Other titles due out soon include Capcom coin-op conversions *Street Fighter* (ST, Amiga) and *Bionic Commando* (ST, Amiga).



• Counter tenner: Klassix to release *Out Run* as budget game

As reported in *Express* last month, US Gold has already cut the price of some of its ST and Amiga coin-op conversions to £14.99 - including titles such as *Vigilante*, *Last Duel* and *Human Killing Machine* - from the usual price point of £20-£25. US

Gold frequently pre-empts universal marketing ploys, so its price slashing bodes well for further 16-bit price cutting throughout the industry. Other software companies are believed to be planning similar ventures in the near future.

### ST goes popcorn

Next time you go and see a movie you might find a new star on the big screen. Atari is planning a series of cinema ads featuring the ST.

### THAT FIGURES

C64 owners in North America spent \$85 million on software last year, according to the Software Publishers Association. The largest slice of that went on games - a total of \$62.6 million. Next came graphics packages at \$6.3 million.

In contrast PC owners spent more than \$2.25 billion dollars on software. American and Canadian computer owners forked out nearly \$3 billion on software.

## Atari's transputer techie to sally forth

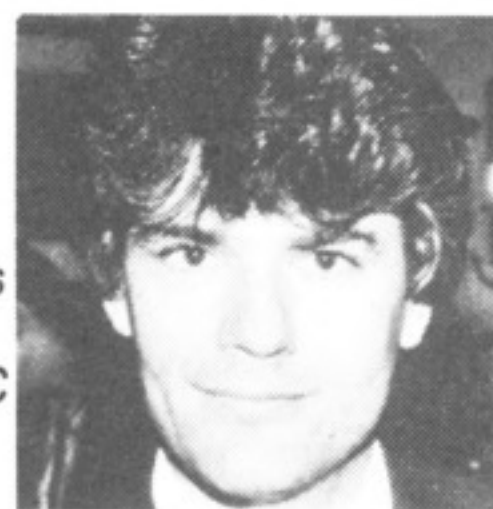
Atari's well known technical whiz Les Player is to leave the company to help set up German 16-bit software highflyer GFA's UK operation.

Player, a familiar figure in computing circles, is responsible for the development of the Atari Transputer which has just started shipping. He has also been instrumental in getting the Pocket PC together and the Atari Robotics Kit which will be out within the next six weeks.

Unlike many hardware techies Player has not shied away from publicity and has often been on hand to outline Atari's releasable technical mysteries.

He will still be heavily involved in Atari

helping GFA with products such as GFA BASIC, BASIC Compiler, Vector and Draft. That firm is



• Gentleman Player: Whizzing off

enormously successful in Germany and recently decided to go it alone in the UK.

"I want to move on and achieve some personal objectives," Player told *Express*. "Being involved in the Transputer and other projects at Atari has been exciting. And by helping GFA I'll still be helping Atari."

## COMPUTER BOOM GATHERS PACE

More and more computers are being bought by the British public according to a survey published by leading market analysts Intelligent Electronics/Dataquest.

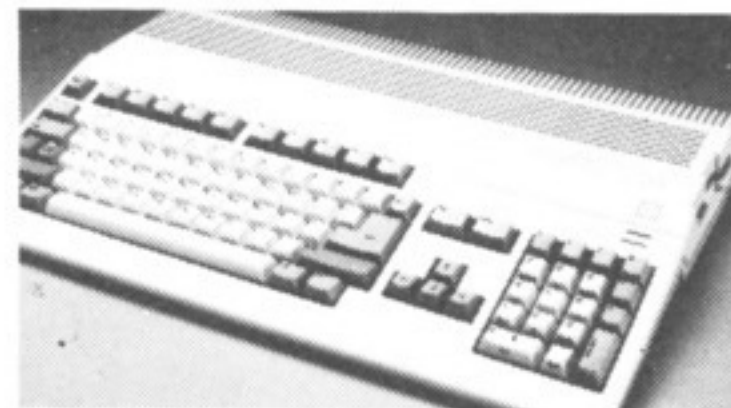
Sales of personal computers in the UK soared by nearly 50 per cent in 1988 compared to the previous year. Total shipments in 1987 were 552,350. But in 1988 that figure had risen to just under 778,000 units.

Whilst this is great news for British

computing some hardware manufacturers have not fared as well as expected. Despite its gallant attempts Commodore's market share dipped in that period from 4.2 per cent to 3.7 per cent. Whilst its flagship Amiga is undoubtedly selling handsomely it still lags a long way behind Atari's ST.

That firm saw its share rise from 5.6 per cent to 9.6 per cent. Astonishingly, Atari's market share is now only four per cent behind Amstrad's. In 1987 Amstrad

was 16.3 per cent ahead. Its share has dipped from 21.9 per cent to 13.6 per cent.



• Amiga 3.7%: Still outsold by Atari ST



## Report criticises classroom computer use

# WHAT A WASTE

Schools are failing to prepare students for the world of computing by misusing the machines at their disposal, according to a report published last week by the schools inspectorate.

The report criticises mainstream educational thinking which still regards computing as a subject in itself rather than as an aid for all subjects. *Information Technology from 5 to 16* says that published schemes which teach children to simply operate computers have "little educational value". Simplistic procedures such as learning to copy files can "mislead parents, teachers and children".

The report goes as far as to suggest that computers should be used for almost all subjects. It argues that observation of children applying technology to different subjects reveals their ability to enhance performance.

It goes on to suggest that pupils use programs such as word processors, databases, spreadsheets, music packages and landscape simulations in subject



• Could do better: Criticism for schools with computers

such as English, History, Maths, Music and Geography. It even says that discussions on the role of Information Technology should be incorporated into Religious Studies. The schools inspectorate points

out that there is not enough computers to go round and that too many people are choosing computing as a study only to become disenchanted because the lessons appear to be irrelevant.

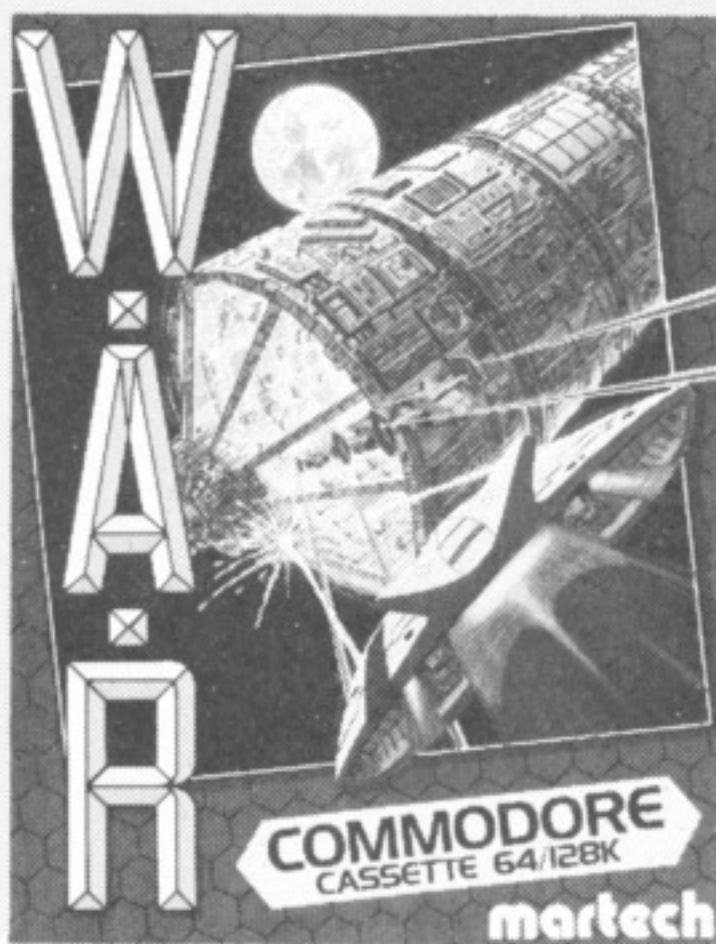
## WINNER CHASES YESTERDAY'S GAMES

A new software label has been launched which promises to re-release old games for new low prices.

The budget house - called Winner - is scouring a number of software houses for back catalogues which will be coming to you for £2.99. One of these is believed to be Activision.

Winner has already signed up a job lot of games from the recently closed down publisher Martech. First out will be the scrolling shoot-'em-up WAR which first saw the light of day in 1986. Winner is the sister label to the established Alternative.

• This means WAR: Martech Winner lot



## DISABLED YOUNGSTERS OFFERED PC CHANCE

Disabled youngsters desperate to take up careers are being offered a chance through a new computer training centre in London's Docklands.

Enterprise Technology Docklands sets out to enhance disabled people's skills using a line up of PCs. The youngsters will be trained on the machines for a professional career.

When completely up and running the centre hopes to train 50 people a year. They will be taught basic computer skills over the year long course. Many, though not all, will go on to work in the computer industry.

The London scheme was spawned from a similar venture in Northern Ireland which has proved to be enormously successful. The London centre received £20,000 in initial funding from an educational trust.

Candidates with any level of disability can be accepted. It is hoped that it will be extended to include the able bodied in the long term.

## And the PC Oscar nominations are .....

The PC Software annual "Oscar" nominations have been announced by the Software Publishers Association in the US.

The prestigious awards programme includes 89 companies and 41 categories. The most important section, Best of the Best, features Adobe

Illustrator 88, MicroSoft OS/2 Presentation Manager, MORE II, Q&A 3.0 and WordPerfect 5.0.

MicroProse and Ashton-Tate are among the few companies picking up five nominations.

In the entertainment sector Who Framed Roger Rabbit, F-19 Stealth Fighter, Life and Death, Jigsaw, Beyond Dark

Castle and Tetris are in the running.

The business section is split into numeric and word processing packages. Ashton-Tate dominates here with the likes of FullWrite Professional and dBase IV.

Others include Ami, WordPerfect 5.0, FOXBase Plus and Ronstadts Financial.

In the Technical Achievement area Mindscape's 3D arcade exploration adventure *The Colony* is mentioned as well as *Paradox 386* from Borland and Norton Utilities 4.5.

The fourth awards ceremony, and the biggest yet, will be held on May 23rd in San Diego.

## TOP 20 Full Price GAMES

- 1 Robocop** OCEAN  
Spectrum, C64, CPC, ST, Amiga, MSX
- 2 Operation Wolf** OCEAN  
Spectrum, C64, CPC, ST, Amiga
- 3 Fun School 2** DATABASE/MANDARIN  
Spectrum, C64, CPC, ST, Amiga, BBC
- 4 Dragon Ninja** OCEAN  
Spectrum, C64, CPC
- 5 Emlyn Hughes** AUDIOGENIC  
Spectrum, C64
- 6 Run the Gauntlet** OCEAN  
Spectrum, C64, CPC, ST, Amiga
- 7 WEC Le Mans** IMAGINE  
Spectrum, C64, CPC, ST, Amiga
- 8 Arcade Muscle** US GOLD  
Spectrum, C64, CPC
- 9 In Crowd** OCEAN  
Spec, C64, CPC
- 10 Middle Earth** MELBOURNE HOUSE  
Spec, C64, CPC, ST, Amiga, PC
- 11 Afterburner** ACTIVISION  
Spectrum, C64, CPC, ST, Amiga
- 12 Football Manager 2** ADDICTIVE  
Spectrum, C64, CPC, ST, Amiga, PC
- 13 Pacland** GRANDSLAM  
Spectrum, C64, CPC, ST, Amiga, MSX
- 14 Falcon** MIRRORSOFT  
ST, Amiga, PC
- 15 Double Dragon** MELBOURNE HOUSE  
Spectrum, C64, ST, Amiga, PC
- 16 Batman** OCEAN  
Spectrum, C64, CPC, ST, Amiga
- 17 Football Man. 2 Exp** ADDICTIVE  
Spectrum, C64, CPC, ST, Amiga, PC
- 18 Renegade 3** IMAGINE  
Spectrum, C64, CPC
- 19 Thunder Blade** US GOLD  
Spectrum, C64, CPC, ST, Amiga
- 20 R-Type** ELECTRIC DREAMS  
Spectrum, C64, CPC, ST, Amiga

## TOP TEN Budget GAMES

- 1 Turbo Esprit** ENDORE  
Spec, C64, CPC
- 2 Treasure Island** CODE MASTERS  
Spec, C64, CPC
- 3 Joe Blade 2** PLAYERS  
Spectrum, C64, CPC, BBC, Electron, C16
- 4 Ghostbusters** MASTERTRONIC  
Spectrum, C64, CPC, Atari 8-bit
- 5 Shanghai Warriors** PLAYERS  
Spec, C64, CPC
- 6 Twin Turbo V8** CODE MASTERS  
Spec, CPC
- 7 Super Cycle** KIXX  
Spectrum, C64, CPC
- 8 Fast Food** CODE MASTERS  
Spectrum, CPC
- 9 Pinball Sim** CODE MASTERS  
Spectrum, C64, CPC
- 10 Who Dares Wins 2** ALTERNATIVE  
Spectrum, C64, CPC, BBC, C16, MSX, Atari 8-bit

RE re-entry • NE new entry • Last week's positions  
Compiled by Gallup  
The charts shown are based on the Open Market, that is retailers who stock a broad range of products. All charts shown are copyright of Gallup.



# SUPER PSION UNLEASHED

British handheld computer leader Psion has unveiled two new flagship models of its big selling Organiser II machine – and the firm says the spec has been chosen by the Psion owning public.

The new LZ and LZ64 boast a number of new features asked for by users of the older models. Psion says it conducted a survey amongst its customers and incorporated the results into the new machines.

The features include:

- Four line screen as opposed to a two line screen
- An 80 character screen - older models only had 32.
- 64K of internal RAM instead of 32K.
- In built software which replaces external datapaks.

- An extended diary
- International dialling codes
- Enhancements of the stopwatch, password protection and basic calculator.

"We conducted several polls in order to find out what existing Organiser owners wanted to see," offered a Psion spokesperson. "They're really in the best position. I think the changes are extensive even though the new models are the same size and look the same."

Simultaneously, Psion has dropped the prices of its entry level organisers the CM and XP Pro by £20.

They now cost £139 and £79 respectively. "Not much more expensive than a fancy calculator," said the spokesperson.



• You said it: Public opinion has shaped the new Organiser

## Atari pledges Hillsborough aid

Atari and leading retailer Silica Shop have pledged cash for the grieving families of those killed at the recent Hillsborough soccer disaster.

The two firms will stage a charity soccer match this Saturday which they hope will raise hundreds of pounds. The game – due to be held

at Bexley Heath – will feature staff from both companies. The amount of money raised will depend on number of goals scored.

"It will be an exciting match but there's a very serious edge to it," said an Atari spokesman. "I hope it's a high scoring match." The match starts at 10.00. Supporters are

welcomed to come along.

Elsewhere on the football front Commodore will be pleased with the news that Chelsea have regained their place in the First division. The team took a turn for the worse when the Commodore sponsorship deal was first secured but a healthy season secured an early promotion.

## Coders golden oldies pondered

Code Masters' budget hits of yesteryear may well appear again on a series of compilations – the firm is pondering launching the first into the UK soon.

*The Best of Code Masters Volume One* features four previous number one hits – *Ghost Hunters*, *Pro Snooker Sim*, *Pro Ski Sim* and *Transmuter*. Originally, the package was intended for European gamers only. But the Coders reckon they might do well here.

Suggestions that the compilation will cost £10 (some £2 more than if you bought the games individually when they were launched) have been all but scotched. "We haven't decided yet but it may well be around £8," was the Code Masters line.



• Catching Code: New compilations on the way

## PICTURE THE SCREEN



• Double vision: New high-res PC monitors from Taxan

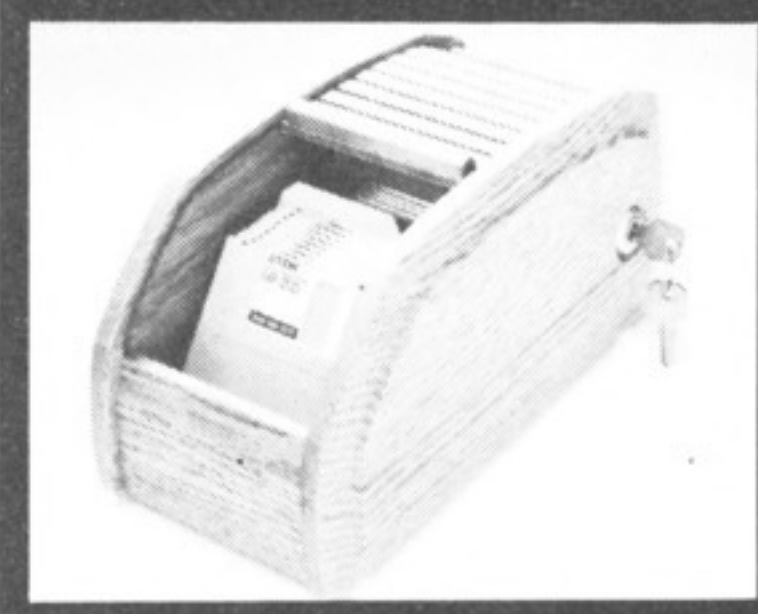
Monitor mogul Taxan has launched hi-res monitors both priced at less than £500.

The high resolution IBM compatible monitors, claims Taxan, will suit bargain hunters looking for a low cost solution. The 12 inch 685 and 14 inch 785 cost £475 and £495.

### Boxing clever

For the computer user who wants to avoid tacky plastic desktop peripherals comes a disk box made of wood.

Supplier Action reckons people with "front office" micros are no longer satisfied with having disks strewn hither and thither and want nice and stylish boxes. If you fancy this wooden offering prepare to be parted with £45. More on 0800 333 333.





NEC

# PC Engine

"A NEW AGE HAS DAWNED"



Chan + Chan



Vigilante

"The PC Engine is not an expensive console, it's a cheap arcade machine"

*The Games Machine*

"Forget Nintendo and Sega, they are not even a spit in the ocean in terms of power and gameplay. Even the Amiga would be very hard pushed when you come up against THE MOST POWERFUL CONSOLE IN THE WORLD"

*Computer and Video Games*

"No flicker, detailed and smooth. Oh gorgeous!!!"

*Computer and Video Games*

"Games on the PC Engine are, quite simply, the best you've ever seen. It's the most impressive piece of video game hardware I've ever seen"

*Geoff Minter, The Nature of the Beast*

"The PC Engine is no fantasy"

*Computer and Video Games*



**HARDWARE** — Look out for the latest computer innovations available on the PC Engine such as a portable colour LCD screen. How about a CD Rom player capable of orchestral sound tracks and true voiceovers with previously unheard of storage capabilities. Imagine if it could double as a top of the range hi-fi compact disk player with amazing software drives facilities.



Galaga 88



Victory Run

IN AN IDEAL WORLD THE GAMES CONSOLE WOULD OFFER YOU

- Unsurpassed software excellence
- Arcade-perfect graphics
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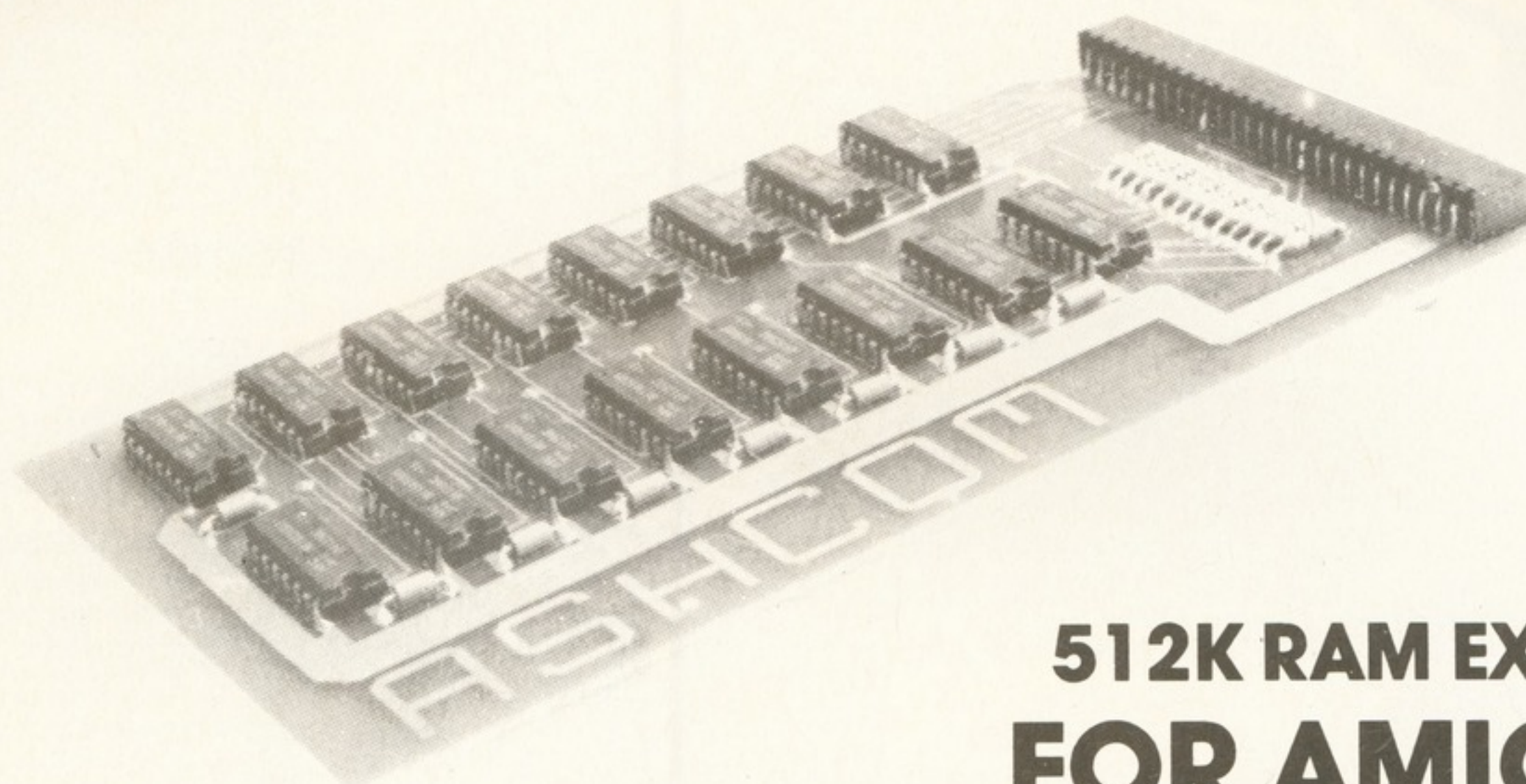


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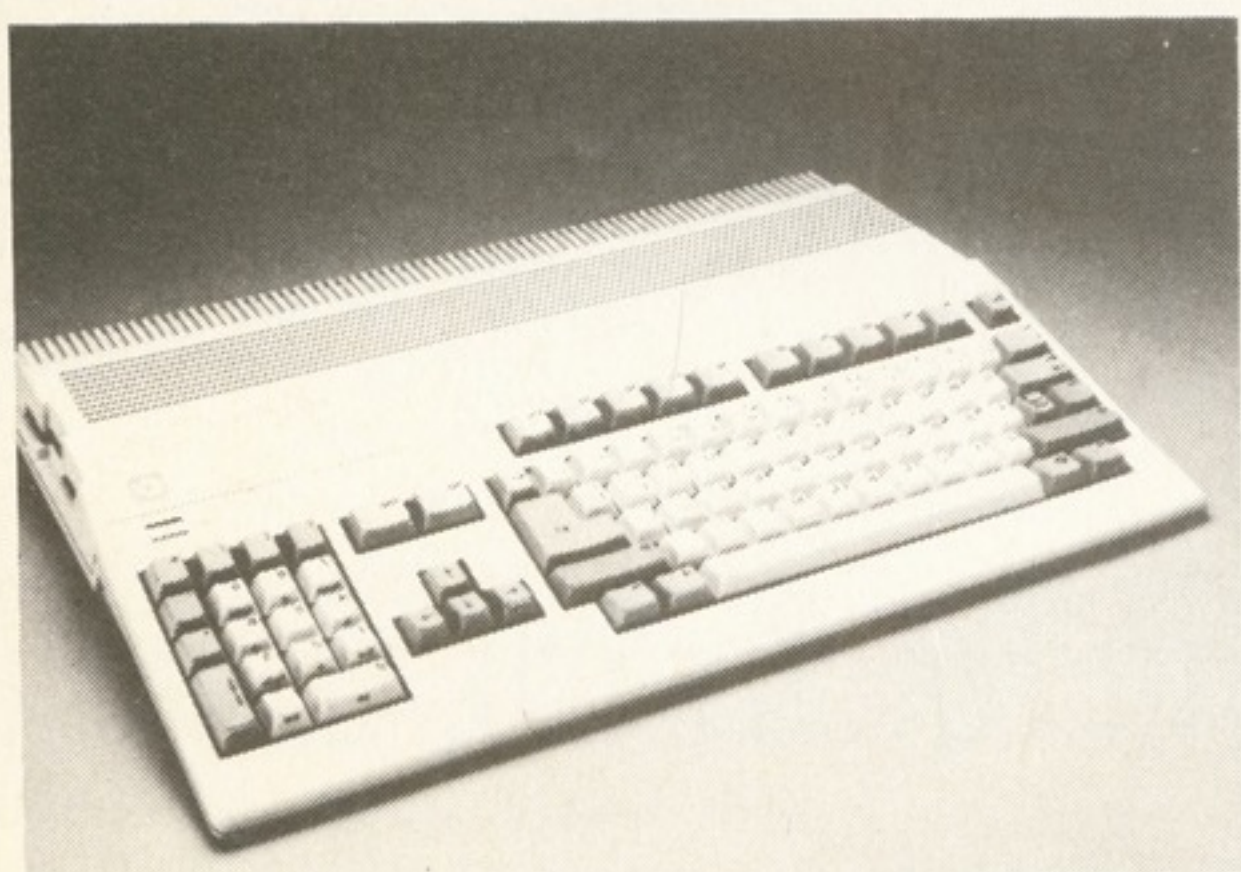
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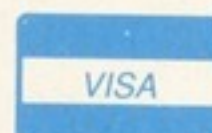
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## CELEBRITY SQUARES

Did the self styled 'Field Marshal' Mellish play the same 'Arnhem' that became an essential purchase for Spectrum war game fans?

His highly critical review (Express 23) indicates a level of prejudice I have rarely encountered in a reviewer. Why oh why must reviewers insist on rating games of this genre as if they were some mutant arcade offering? Mellish makes comments on graphics and sound which are unfair as both are functional for the purpose.

Perhaps you could employ reviewers with a certain empathy as opposed to hostility - I doubt if you would ask Germaine Greer or Mrs Whitehouse to review 'Teenage Queen' for example.

I'm not asking that every computer war game be given a football review, merely that such products are compared with like, and not a completely different type of game.

Duncan Maggs, Great Barr, Birmingham

Neil Kinnock to review Mini Office's Thesaurus, Elizabeth Taylor to review GEM, Tony Benn to review LISP?

## PROTECTION RACKET

On the subject of making backup copies of software, why don't more software houses employ the method used by Electronic Arts on *Fusion*, and Sierra on *Leisure Suit Larry in the Land of the Lounge Lizards*? You are encouraged to make a backup of the game disk but when loading the copy you must, at a given point, insert the original for verification. When it is completed you put the copy back in the drive and presto! You play the game without fear of destroying your original and the software house protects themselves from pirating.

Andrew Ward, North Walsham, Norfolk

● It certainly lessens the chance of your original being corrupted, but it can be a bit annoying to have to dig out your master disk to carry on playing the game: not so much



● Get Mary W. to review 'Teenage Queen', says Duncan Maggs

● Games reviews are subjective things and I'm afraid there's little we can do to change that. Getting facts wrong is one thing, but if we don't like a game, we're bound to say so. It would be a strange system, only letting a reviewer write about a game if they liked it!

But I'm intrigued by your celebrity reviewers. It is an excellent idea. How about getting Mark Thatcher to review *Autoroute*,

presto as *molto agitato*. And if your master does go down you're still stuck.

Other possibilities include asking you to enter the eighth word on the fifth line of page 152 or whatever of the accompanying novella. Doesn't work for shoot-'em-ups, though, as it's bound to be a guessable word like phaser, shield, or mutant.

So I suppose I'm agreeing with you; it seems the least worst solution.

## TICKING OFF

In answer to the letter 'Student Games' in Express 23, you mentioned that "Computers on tick are only from Commodore..." This is not so: so far, to my knowledge, companies involved in the NUS Futures scheme are Acorn, IBM, Commodore and Amstrad. Acorn offer the least generous discounts. IBM, on the other hand offer amazing student discounts, £1,800 machines slashed to £900 for example.

The machines must be bought there and then, or with a special 'Futures' loan from the Midland Bank. An information pack is available from the NUS, which, as

well as explaining a lot of computer jargon and listing specs for various machines, helps you decide which computer you need to help with your studies.

K Simpson, London



● For giving students and prospective students everywhere this valuable information, we're making this our letter of the week. Drop us a line telling us what machine you own and we'll send you a mystery piece of software. (Though you may not be popular with the lecturers and tutors whose attendances fall as everyone spends the mornings playing games on their STs, PCs and Amigas).

The NUS, by the way, is on 0457 468003.



## Dear Reader

More pages packed with another selection from our postbag. Have you got something to say? Make your voice heard in computing's liveliest letters page!

Send your contributions to:

**Express Mail, 4 Queen Street, Bath, Avon BA1 1EJ**

PS. Sorry, we just don't have the time to give personal replies, whether you include an SAE or not. We're too busy putting Express together!

## JACK'S OFF AGAIN

I suppose I'll have to reply to your rather scathing comments about me (Express 23).

I agree, no one is forcing me to make and use pirate copies of software, but I only copy and use stuff which I can't afford to buy, and where possible I try to use PD stuff if I can't afford the 'real' thing. So why can't software companies pay themselves, their programmers etc. less, and no cries of "but we only earn a pittance anyway".

If you would care to look in a book called "Success in Software" published by Superior Software on page 9 about half way down it mentions "Tim Tyler, a 17 year old from Exeter, who wrote the acclaimed Repton and Repton 2 games. They quickly rose to the top of the BBC micro charts and within 18 months Tim has earned £41,217.15 in royalty payments". This works out at £27,478.10 per year in 1987's figure so it is probably somewhere in the region of £30,000 per year now. The programmers are earning something in the region of 2 to 4 times the salary of those who keep them in business, so who's conning who!

I know what I am doing is illegal, but I can't afford to pay the over inflated prices of today, so I won't be giving you my real name, I don't want the guys from FAST knocking on my door do I?

My name is not a tribute solely to the Rolling Stones, but I took the name from the character in the film "Jumping Jack Flash" starring Whoopi Goldberg, you ought to see it, it's really good.

Jumping Jack Flash

● Well, we're doing a special feature on where the money you pay for your games (or not, in your case) goes. Sorry, but I just don't believe you when you say you only copy games you can't afford; it's like saying you only steal things you can't afford, so that must be OK then. And if you don't like the fact that some programmers earn lots of money, you're welcome to write your own games.

A quick poll of the Express offices rates Jumping Jack Flash at one to two stars (out of five). Whoopi is OK in serious roles (Colour Purple) but we don't rate her as a comedienne.

## POWER TO THE PCW

Express is an excellent magazine - I wouldn't buy any other.

(REM: Hmm, the mailmerge seems to work OK - I hope one of your rivals gets its version at the same time, that would be a hoot).

Now, following the format of most letters: Nah Nah Ne Nah Nah - my old ZX81 is better than your Archimedes, it's cheaper, more compact, a prettier colour - and it's certainly got more software...

A plea to some of your correspondents. Don't be so dogmatic/humourless/aggressive about other people's machines - buy the one that best suits your needs/pocket/preferred software, and enjoy it - but that doesn't stop you respecting other people's choice, even if they are richer, poorer, or just having differing needs or tastes. Also, don't laugh too loudly when they tell you that they own a QL.

OK, that may be a bit too much to ask - you laugh if you want to.

Finally, a few questions:

1 Can we have more articles on the Amstrad PCW - Yes, the truth is out, I own one - what do you mean "the naff print out was a dead give away?"

2 Will there ever be a world without war, famine and disease?

3 Will there ever be a Prime Minister who isn't called Margaret Thatcher?

4 Will Database ever release the Spell checker/ Thesaurus for Mini Office Professional?

5 Will you dare print this, in case I have sent a version to another magazine?

May your disks never corrupt.

Ron Grant, Sheffield

● Naff printout? Not at all! Tell me another word processor that can write in twenty different fonts and in 24-pin quality Roman, Cyrillic, Greek, mathematical symbols up to post doc level and cope with any accents and alphabets in any European language except Macedonian and Tartar!

1 Rest assured we'll be covering every single new release for the PCW this year in great detail. I've put half a page aside in a September issue to cover it.

2 Well, there's more chance of that than of Dragon's Lair coming out on the PCW.

3 Sorry, we don't discuss politics in Express.



4 Looks like it's a toss-up between which happens first: Database releasing their spell checker/ Thesaurus or Britain getting a Prime Minister not called Margaret Thatcher.  
5 Of course not. Do you think we're gullible or something?

## HIDDEN MESSAGES?

I recently bought a Mini Office 2 for my CPC6128 and promptly started to create a spreadsheet for my monthly outgoings and following the menu instructions I saved the spreadsheet. Then when I catalogued the disk it showed a spreadsheet 1 and a spreadsheet 2. I thought this a bit odd so I booted my CPM+ and at the prompt entered the type command. I then TYPED spreadsheet 1 to which came the reply, "The bugs are bigger, better and free". I was gobsmacked by this remark so in a panic I typed at the prompt DIRSYS and found a file named KNIFE.BIN. I then did a TYPE of KNIFE.BIN which then revealed a little gripe message. Database sent a replacement with the same result.

I rang Database asking for positive assurance that the disk was not corrupted but as yet I have had no reply. Could you please help?

Duncan M Cox, Sheffield

● Does't seem anything serious to me - Mini Office has been out years and anything dangerous would have been noticed by now. You've got into those funny messages that programmers like to leave hanging around in their code. Mini Office owners can have fun examining the contents of KNIFE.BIN which say rather interesting things about sheep, Database, and car park attendants.

## FOR AMIGA 50p

I purchased my Amiga 500 about 3 months ago, and was, as I imagine are most new Amiga owners, dismayed at the price of most decent software. It was with much relief then that I obtained the address of Ray Burt-Frost, as he has his own non-profit making, low cost Public domain Software Club.

My reason for writing is that recently, many Amiga PD groups have sprung up, but some charge up to £3.00 a disk!! Ray, on the other hand, merely asks for the blank disks and a nominal copying fee to cover wear and tear on his overworked Amiga!

His collection is second to none, containing such gems as the Walker Demo, Eddie Murphy Live!, and the complete TBAG collection. His address is: Ray Burt-Frost, 169 Dale Valley Road, Hollybrook, Southampton, SO1 6QX: Tel 0703 785680

Damion Way, Harpenden, Herts

● Ray says that he'll send you a directory of the PD stuff he has if you send him a blank disk and a stamped addressed jiffy bag for its return. He believes that PD should be as low cost as possible and only charges about 50p per disk. Good on yer, Ray.

## SLUGS AND SNAILS, MORE LIKE

Readers thinking of accepting Mr Alan Sugar's offer of fifty quid for their old typewriter when they buy one of his PCWs should think carefully before they accept.

My PCW developed a small printer fault back in early February. Over two months later I am using my old Olivetti typewriter. One letter to Amstrad took six weeks to answer and then only said how good the

PCW is. Another was signed by a Mrs Muldouney who when I tried to phone her appears to have not worked for the company for some months.

Eight weeks after taking my PCW in for repair the retailer, Twillstar Ltd, went into liquidation. Now I am having hassles with a Mr Dunn the company's accountant and the return of my property seems nowhere in sight.

My last letter sent recorded delivery to Mr Sugar is of course unanswered after two weeks, presumably the ghostwriters have a malfunction or Mr Sugar is too busy celebrating his appearance in the Sunday Times '200 Richest men in Britain' feature.

The shame is I was very pleased with the damned thing, but I'm still glad I kept my Olivetti.

Keith Mason, London

● It's all an unfortunate story: PCWs generally are very reliable and robust. Amstrad hasn't got the best name in customer service though (nor in helping journalists).

## MAKE A CLAIM

I was amused to read about the introduction of DSS Advice Computers (news, Express 23). Will it be able to withstand the verbal and physical abuse human advisers have to take at present?

I say at present because as from next year the DSS is computerising itself; all London's giros will be issued from Wigan!

I was not too chuffed at the word 'unbiased' in your report - seems to suggest we merely human advisers in the DSS deliberately misinform claimants which is a bit of a slur on 20,000 people whose jobs will eventually go under the new system!

Finally, I've enjoyed the cartoon series which has appeared with each 'microbiography'. A bit stereotypical - or should that be monotypical for all computers apart from the Amiga? - but generally they have raised a smile before I and my colleagues brave the claimants on a Thursday morning!

Don Griffith, Hammersmith

● I don't think you need worry about crossing over to the other side of the counter yet: apparently the computers are not



• Takes all sorts to make a microbiography series

intended to replace human advisers, only supplement them. And as for the slur that DSS people deliberately misinform claimants, you said all that, not us! All we said was that the advice the computers give isn't going to be biased, as you might otherwise expect if the expert system giving it is inexpertly written.

They don't look likely to make an appearance for many years yet, until they've undergone extensive test - presumably to see how much verbal and physical abuse they can withstand.

As for the cartoons, the last of which is in this issue, we make no apology at all for the archetypes portrayed. We had a great laugh deciding what to make each one and the cartoonist did a brilliant job getting all the fiddly details we asked for in each time. Grateful thanks (and money) are due to Nick Davies.

## HARD TO COMPREHEND

Maybe I've got the whole idea of disk storage wrong, but I've always thought that the more you put on the disk the less space there was and if you erased something more was made available. However, your Learning Curve (Express 22) has shown, the error of my beliefs. When the file 'junk - erase' was erased from the disk a whole 36K of memory suddenly became unavailable. Where does one get such a wondrous thing as a Hard Disk of Infinite Storage Capacity?

Andrew Ranson, Scunthorpe, South Humberside.

● Each screen had to be 'grabbed' - i.e. an image of the screen saved to the hard disk. Therefore each subsequent picture in the sequence shows less of the hard disk available, because space has been taken up by the preceding grabbed screen.

Hard disks of infinite capacity are available from MegaSoft (see Express 21 p30). Include a cheque for an infinite amount of money together with an infinitely large jiffy bag.

## QUESTIONS

Why is it that some software houses, particularly Ocean, continually churn out games where the Amiga version is £5 dearer than the ST one? I would understand if the Amiga version merited the extra fiver, but all too often it doesn't and companies like Hewson have already

proved that a good Amiga game can be priced at under £20. Ocean is an admirable software house where 8-bits are concerned, but their 16-bit versions of games sometimes leave a lot to be desired.

Why is it that your review of FOFT contradicted that of ACE (actually that could be the other way around). Now I don't know whether I should go for FOFT or Elite, both of which have only recently come out on the Amiga.

Finally, I would be grateful if you would list the basic requirements if I were to use the Amiga for MIDI. Every time someone shouts MIDI someone else shouts ST. Commodore would do well to bundle whatever it is that's required to make the Amiga MIDI compatible, if only to rival Atari.

Adrian Alam, Bearsden, Glasgow

● Just to repeat, we're doing an expose on games prices in the next few issues. Why shouldn't our review of FOFT contradict ACE? The games were reviewed by different people and as Clint Eastwood says in The Dead Pool (Dirty Harry V) opinions are like our souls - everybody has one.

## THE MAGIC DRAGON

Although I agree with James Handley (Express 19) on the merits of the Dragon, I must take issue on two points.

The Dragon did not die out, although support from some quarters did.

The Dragon did not become extinct, but some of the software houses did.

What did happen was that unjust and distorted reports in the computer press of the time led to the premature demise of Dragon Data Ltd. Ironically those magazines who predicted no future for the Dragon have now ceased publication although the Dragon has survived with the help of User Groups, Amateur Magazines and the support of Software Houses.

For proof of the Dragon's continuing existence I suggest that James or any other interested reader contact one of the Dragon magazines who reporting increasing subscriptions, or visit one of the four Dragon shows being held this year. How many other machines have the luxury of that many shows?

Addresses for further information are:

- Paul Grade, Dragon User Group, 6 Navarind Rd, Worthing, Sussex
  - Dragon Logic Magazine, 72 Diribught Rd, Inverness, IV2 3QT
  - 6809 User Magazine, New Era Publications, 37 Collins Meadow, Harlow, Essex CM19 4EN
  - Dragon Magazine, Dragonfire Services, 13 Parry Jones Close, Blaina, Gwent, NP3 3NH.
- Alexander McIntosh, Edinburgh

● Thanks very much for the info - hope this brings a few old Dragons out of the closet (and a few Dragon owners too).

## +3 PD OK

May I offer advice to Ian Johnstone who was looking for PD software for the Spectrum in general, and the +3 in particular?

I suggest that you take a look at Outlet, a monthly disk-based magazine. In it appear frequent examples of PD software, or 'freeware' as they refer to it. Some PD software is also available from Micronet.

Whatever else, please continue to produce your excellent magazine and



giving pleasure and satisfaction and value for money.

Hugh MacGregor, Pitlochry, Perthshire

● **What a helpful bunch you readers are!** Thanks for the information, and for the leaflet you sent us on Outlet. Interested Speccy owners can order Outlet from Chezron Software, 605 Loughborough Rd, Birstall, Leicester LE4 4NJ for £3.50 disk, £5 on two microdrive cartridges or £2.75 on cassette. A trial copy of any format is available for £2, so what are you waiting for?

Also (we see from a leaflet from Don Griffith, see these pages) Locomotive does a £30 Spectrum CP/M, enabling you to use the large quantity of CP/M software around. Details from Locomotive on 0306 740606.

## ARCHIEEKY CHAPPY

Why are you so cheeky to the Archimedes? The Archie games are much



• Ooh, we're so cheeky to the Archie

better than the Amiga and ST's. When occasionally you do review Archie games you make some cheeky comments. You may pay twice as much as an Amiga or ST but you get overall ten times better a machine.

Devoted Archimedes users should know that plenty of people have written in and told you this, and you have no argument, ha!

You are also very cheeky to the people write in, e.g. last week (Express 23) someone wrote a very long poem, and your comment was very cheeky in reply. Do you want to go bankrupt or something? If you do you're going the right way about it!

An Archie and BBC user

● **Cheeky chappy, that's me. There'll never be another! I like the girls who do, and I like the girls who don't. But most of all I like the girls in Teenage Queen - no, listen!**

**Bankrupt? I went out with a girl from a bank once. She said, would you like to make a deposit... (curtain falls and Max Miller never works the Express Palladium again).**

## FINE WORDS BARTER NO PARSNIPS

Why don't you have a guest/ reader's reviews section as an occasional item? I don't mean for games as such, but for serious applications and

# SNIPPETS

## FROM THE BEEB BANDIT

Computer viruses...  
The Beeb Bandit

● **Editor's note: This letter has had all the nonsense edited out.**

## TO THE BEEB BANDIT

...I can see no sense in making something which has no constructive ability other than that of inflating the egos of pathetic morons like you... Personally I feel that you should spend more time growing up...

Simon Howard, Peacehaven, Sussex

## WE'RE NOT ALL SEXISTS

Listen ladies, I have nothing against female computer users but a few of you seem to think that all male game players are spotty 14 year-olds who drool over the likes of Teenage Queen

- that's wrong.

Adrian Alam, Bearsden, Glasgow

● **Absolutely. Where do they get this tired, cliched old idea that computer users are furtive self-manipulators who put sexual innuendo in everything? It's utter rubbish.**

## WHINE WOMEN AND THROG

I do wish that these people who write to your magazine would stop whining on about these soft porn games such as Teenage Queen etc. I would personally like to see some hard-core porno games with plenty of sado-masochism involved.

Ivor Wright-Arden, Hampton

● **OK, maybe some computer users are furtive self-manipulators who put sexual innuendo in everything.**

suchlike which many people like myself could never afford to buy, such as Calamus, Superbase Professional etc. which are beyond the reach of my budget.

I have managed to get a 1040STF system with printer, plotter and monitor mainly by using a barter system, e.g. I swapped a camera for my external 1 meg drive.

C Parker, Bristol

● **The problem with a guest reviewer's section is that the professionals want too much money and always send the review two days late, and as for readers... well, if they did it for nothing I rather suspect you 'could not guarantee quality' and the result would need 'subbing into house style'.**

Interested to hear of this barter idea. Anyone want to swap an Ascot multipoint gas water heater, vgc with original manual, for an ST?

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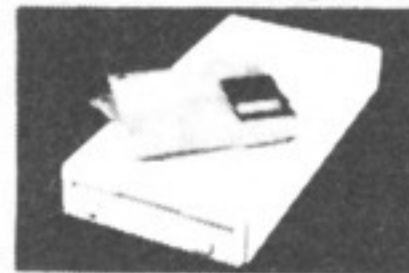


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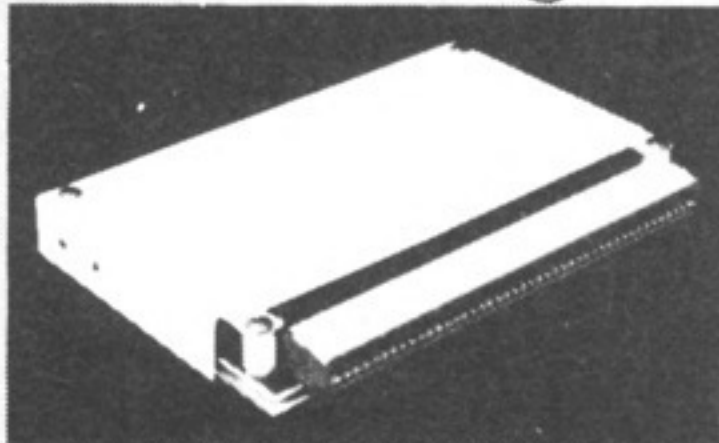


PHOTO OF A500 VERSION

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★ More programs require more and more memory ★ Extra memory allows the creation of large ram disks — especially useful for speeding up complicated animation routines ★ The memory inside your computer is chip ram. This means that the microprocessor cannot access it when the custom Amiga chips are using this memory. This reduces the execution speed of programs — especially those that are very graphics intense. **MINIMEGS IS 100% FAST RAM.** The 68000 can access it without interference.

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# Banks for the memory

*Double your computing power! Adding punch to your micro with a memory upgrade can be easy to do – and give you access to new packages and programs you couldn't otherwise run. Memory Man Jerry Glenwright shows you how...*

**R**emember when buying a 16K RAM pack for your ZX81 meant gargantuan memory? When Commodore used an elephant in magazine advertising for the 64, to illustrate the elephantine memory capacity of the machine? Nowadays, 64k of memory is regarded as a paltry amount in computing circles, and 16K? How long did the 16K versions of Spectrums and Orics last?

The latest 16-bit machines all come with 512k as standard and even the 8 bits can muster 128K – even if they can't address all of it directly. So why should you need to expand the memory even

further? What's wrong with having 64K?

Well, it's the old story of the more you have, the more you want. No sooner are machines with half a meg widely available, than software houses write packages requiring just a little bit more in order to provide that 'much-needed' extra facility.

Since the beginning of the home and small computer industry, the amount of RAM a machine had was used as a big selling point. As the computer industry matured, manufacturers looked for new ways to sell their machines. With the refining of the chip manufacturing process and

the consequent higher proportion of usable chips per batch, the price of RAM chips dropped by huge amounts. Prices dropped to an all time low 3 or 4 years ago, when it became possible to buy DRAMs at less than their price of manufacture, if bought in bulk.

An enormous glut of RAM chips meant that computer manufacturers could afford to include a large amount of memory with their machines and use this as a marketing ploy, but for once, the beneficiary was the end user. The price of machines fell and their 'power' increased.

Software houses began to make use of all this available RAM by writing games requiring massive amounts of RAM to store graphics, sound and text. It became possible for programs previously only available on much larger machines to be used with micros.

Desktop publishing, music packages, paint programs and machine emulation applications all need large amounts of memory to be used to their full capacity. Many programs offer different modes in which they can run depending upon the amount of RAM your machine is equipped with. Indeed, many of the new applications won't run at all unless you have a machine with expanded memory.

Consequently, if you have a machine with a small memory, then you need some kind of RAM expansion before you can take advantage of all this new software. There are a lot of suppliers who have recognised a niche in the market and are selling RAM upgrades, and the chances are good that there is one available for your machine.

Upgrades come in several guises. Some are just

## Amiga

The Amiga is particularly well covered by RAM upgrades, and you'll need one if you're going to make use of some of the excellent paint and graphics packages which are being released for the machine – also, several games available in other formats in half a meg will only work with Amy if it is expanded to 1Mb. Among them is *Dungeon Master*, the best-selling game on the ST. Try

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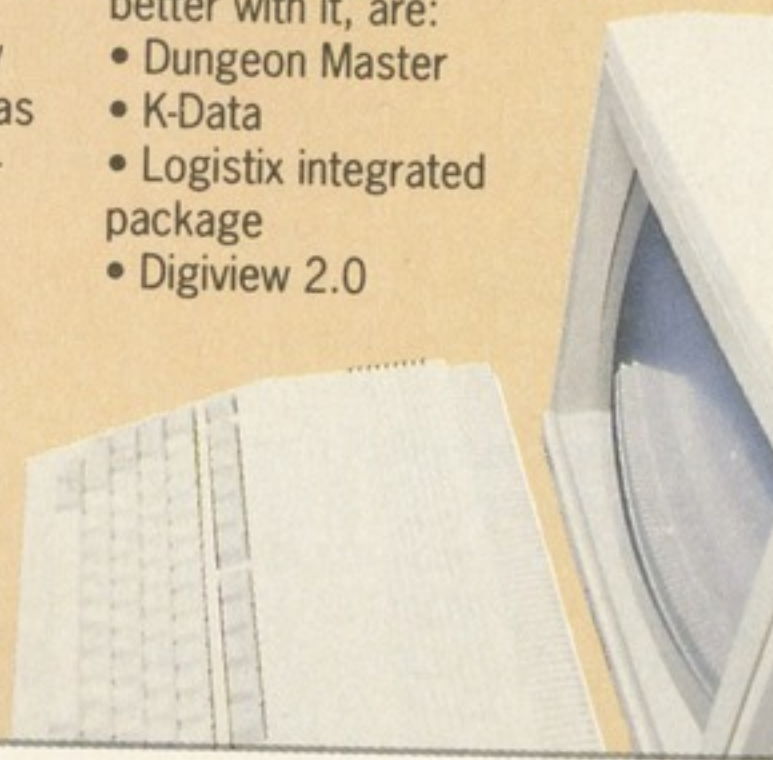
memory upgrades in its 'Matchbox Collection', which are excellent quality, small, very easy to fit and cheap. We used the MicroMags product in these 'how to do it' photographs. The product is very well made, has a real-time clock as standard, and – as you can see – is very easy to install.

**Ashcom, 10 The Green, Asby-De-La-Zouch, Leicestershire LE6 5JU. Tel. 0530 411485.**

The Amy is just made for upgrades. You simply remove a panel on the back of the machine using a flat blade screwdriver,

plug in the memory board and snap the panel back into place. Some programs that need the extra memory, or work much better with it, are:

- Dungeon Master
- K-Data
- Logistix integrated package
- Digiview 2.0



## Amiga

• The 'Micromags' RAM expansion shown component side up

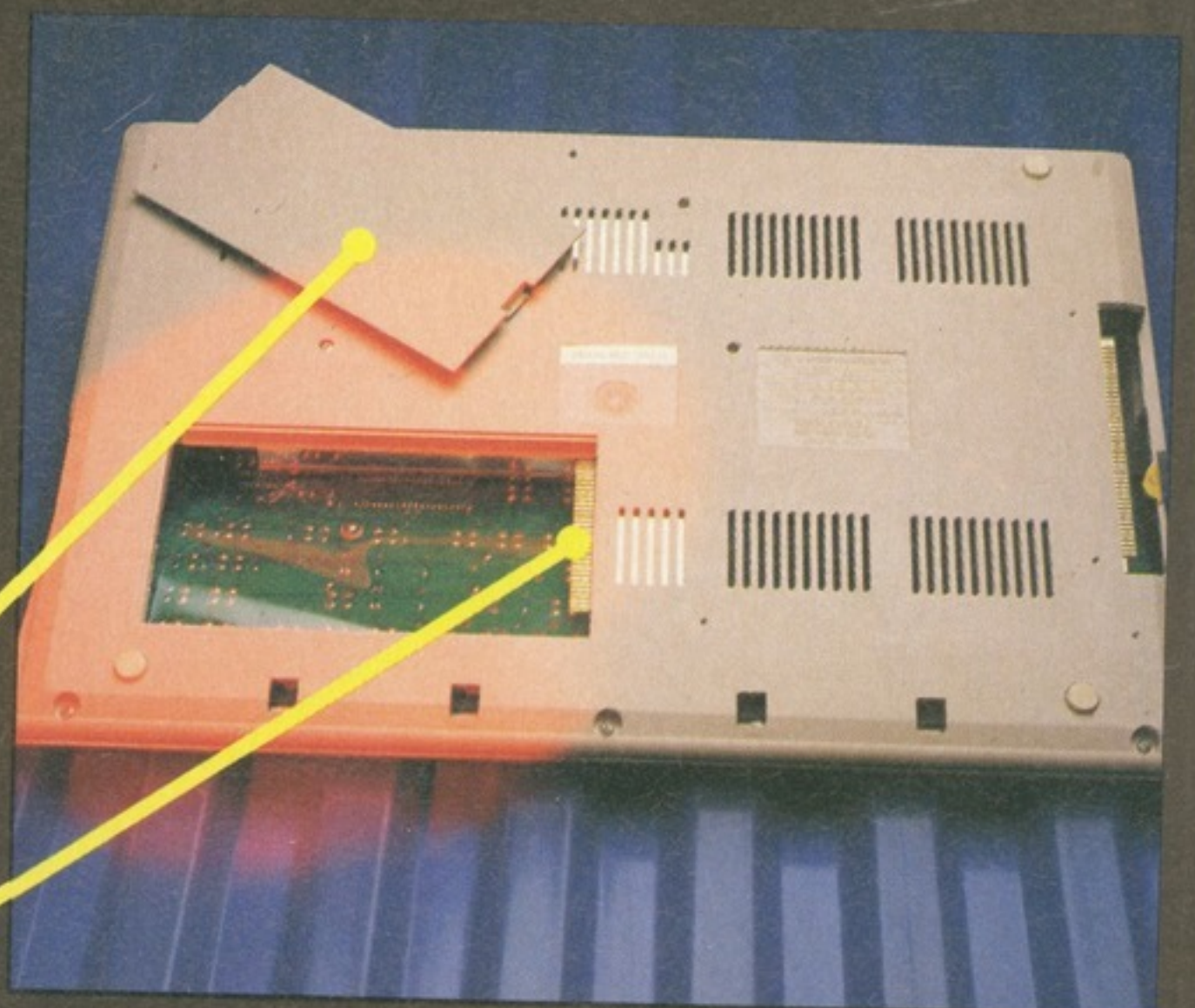
Connector

Battery for real time clock

RAM chips

Cover can be removed with a flat blade screwdriver

Connector for user upgrades



• After turning the Amiga upside down, removal of the expansion port cover is easy, and provides access to the necessary connector



# RAM UPGRADES

## HARDWARE

a box of chips and capacitors and you're expected to identify the area of installation and wield a soldering iron in order to upgrade your machine.

Others are housed in a plastic box with a connector to facilitate attachment to the computer, making the whole process of installation very easy. Almost all expansions come with extensive and clear instructions and with a few simple tools and a little application it will be easy. To carry out most upgrades you will need cross head and flat head screwdrivers and a soldering iron.

You must be aware though, that in almost all cases you will invalidate the machine's guarantee by opening the case, although if you've owned it for more than a year then the guarantee will probably have expired anyway.

The actual operation will probably involve you opening the case of your machine, locating the position for the new chips, determining the correct orientation, then installing them on the board either by insertion in existing sockets, or soldering new sockets in purpose made holes, and then inserting the chips. Once the upgrade is installed in your machine, you will be able to take advantage of lots of new software.

How about attempting some real-time animation? With a megabyte of memory it's possible to animate lots of frames. Want to publish a newsletter? A memory upgrade will make it much easier, by allowing you to store more of the document in memory at one time and by limiting the amount of disk swaps needed. Music packages and games too will all benefit from the extra memory. ●

## PC

Although the PC-DOS can only address 640K directly, many applications make use of extended memory by bank switching RAM. Spreadsheets and databases are particularly suited to large memories and almost all of the latest applications have the facility to make use of extended RAM.

Try: **RSC Limited, 75 Queens Road, Watford WD1 2QN. Tel. 0923 243301**

**CYCA Limited, 287 Caledonian Road, London N1 1EG. Tel. 01 700 4004**

Upgrading the memory of a PC is very easy – the machine is designed to be opened and upgraded. Simply undo a few screws, lift off the casing, plug in the board containing the chips and close the machine up. Some programs that need the extra memory, or work much

better with it, are:

- Ventura, the DTP package
- Any Novel network (they all require at least 2Mb)
- AutoCAD design package
- Windows, graphical front end for PCs



## PCW

If you have an 8256 and want to upgrade to 512K of memory (same as an 8512 or 9512) try

West of Britain Business Services, department 8/4, Capel Tobi, Ffairfach, Llandeilo, Dyfed SA19 6PR. Tel. 0558 823782

Silicon City, department 8, Wheal Rose, Redruth, Cornwall

TR16 5DR. Tel. 0209 891141

Carrying out the memory upgrade of a PCW is relatively straightforward. After undoing the six screws holding the monitor case together, you disconnect the power and disk drive cables and the main board can be slid out of the case. It's then a simple matter of inserting the chips, flicking a dipswitch or two and putting the whole thing back together.

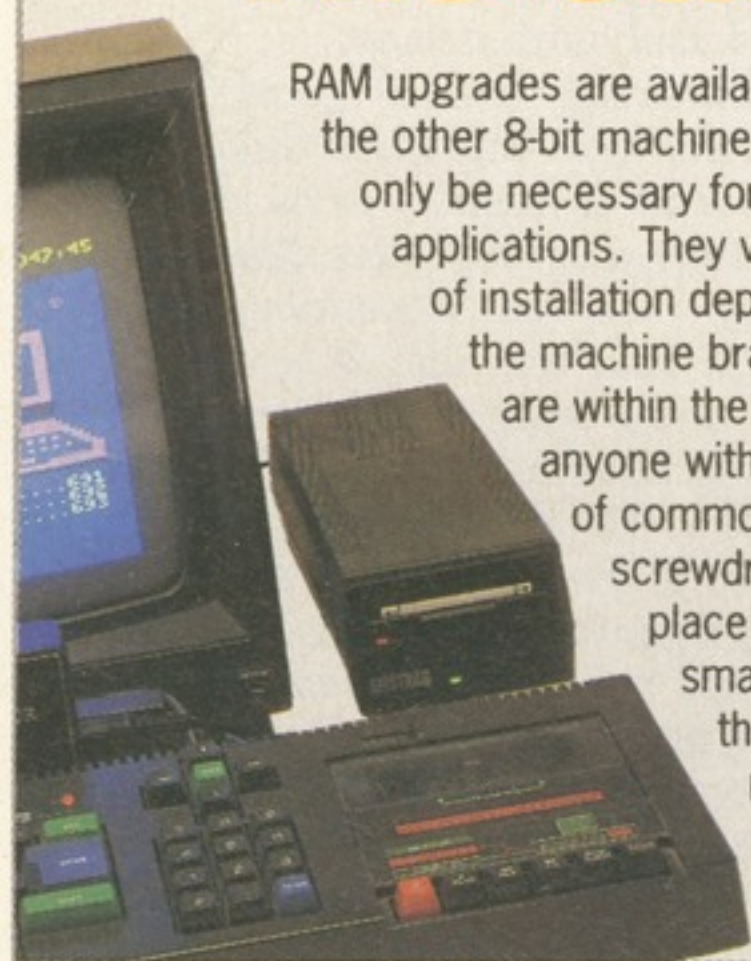
A RAM upgrade will have an immediate effect on all your

applications, but especially within LocoScript – your RAM disk (M:) will leap from 102K to a massive 358K allowing you to store many more documents on the M: drive at once. Essential if you want to make best use of the LocoScript add-ons such as LocoSpell, the printer fonts, printer drivers, the database LocoFile and so on – maker Locomotive now recommends that all 8256 owners do the upgrade.



## The others

RAM upgrades are available for most of the other 8-bit machines, but they'll only be necessary for very specialist applications. They vary in difficulty of installation depending upon the machine brand, but most are within the scope of anyone with a modicum of common sense and a screwdriver. The best place to look is in the small ads of the computer magazines (i.e. Express!).



## ST

Almost all 'serious' applications and lots of games will be improved by expanding the memory of your ST from 512K to 1024K – if you can find a supplier, that is. Although there are a lot of people who would like to sell you a memory expansion, RAM prices being what they are, RAM upgrades are pretty thin on the ground at the moment. Try:

**Ladbroke Computing International, 33 Ormskirk Road, Preston, Lancashire PR1 2QP. Tel. 0772 203166**  
**Datel Electronics LTD, Fenton**

**Industrial Estate, Govan Road, Fenton, Stoke-on-trent. Tel. 0782 744707**

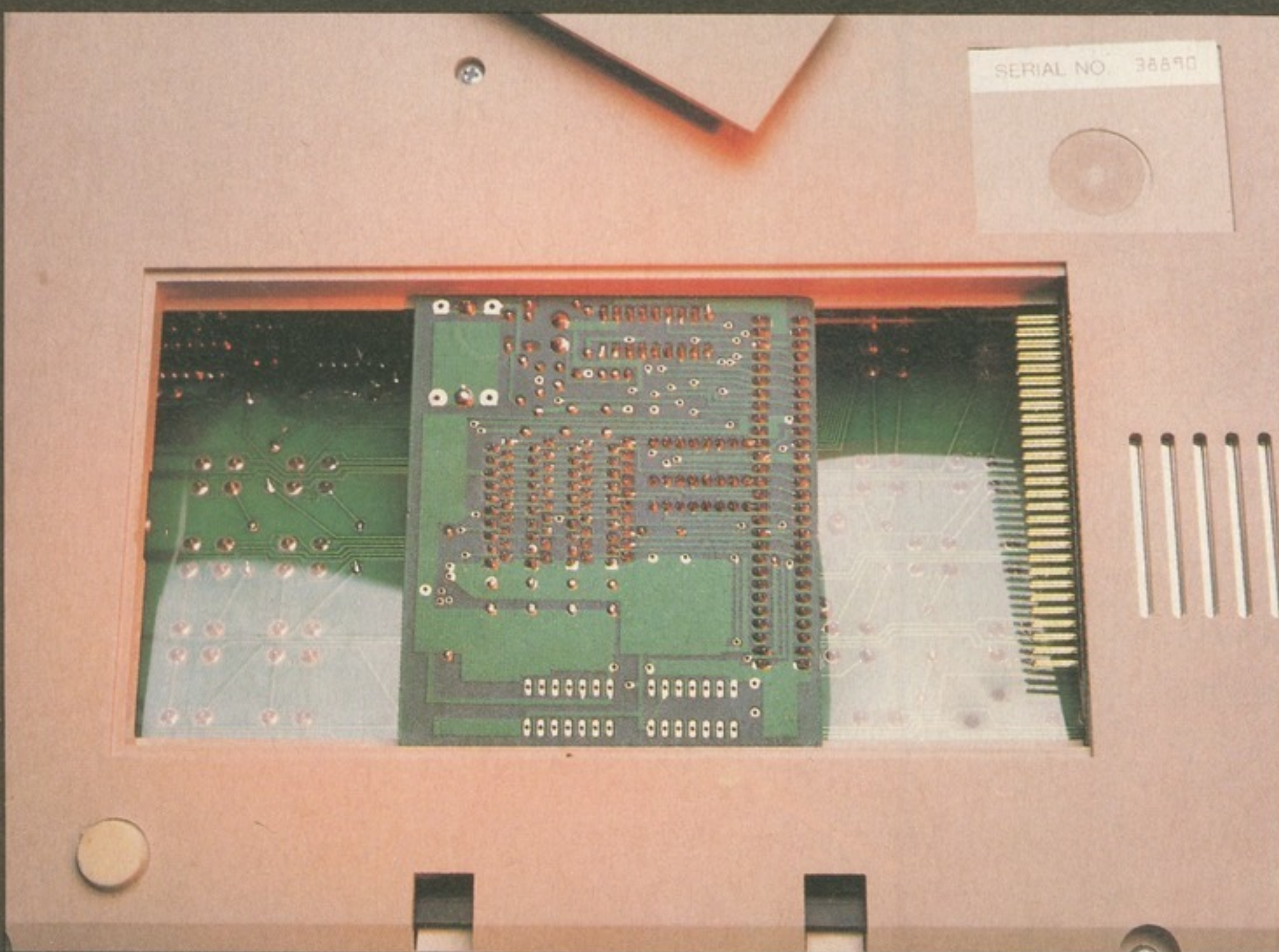
Upgrading the Atari machine varies in difficulty. With the STFM, it's a relatively simple matter of opening the case and inserting the chips.

With STM things are very different. You have to solder sockets onto the main board before you can insert the chips, although there are several dealers who would be willing to carry out the upgrade on your behalf.

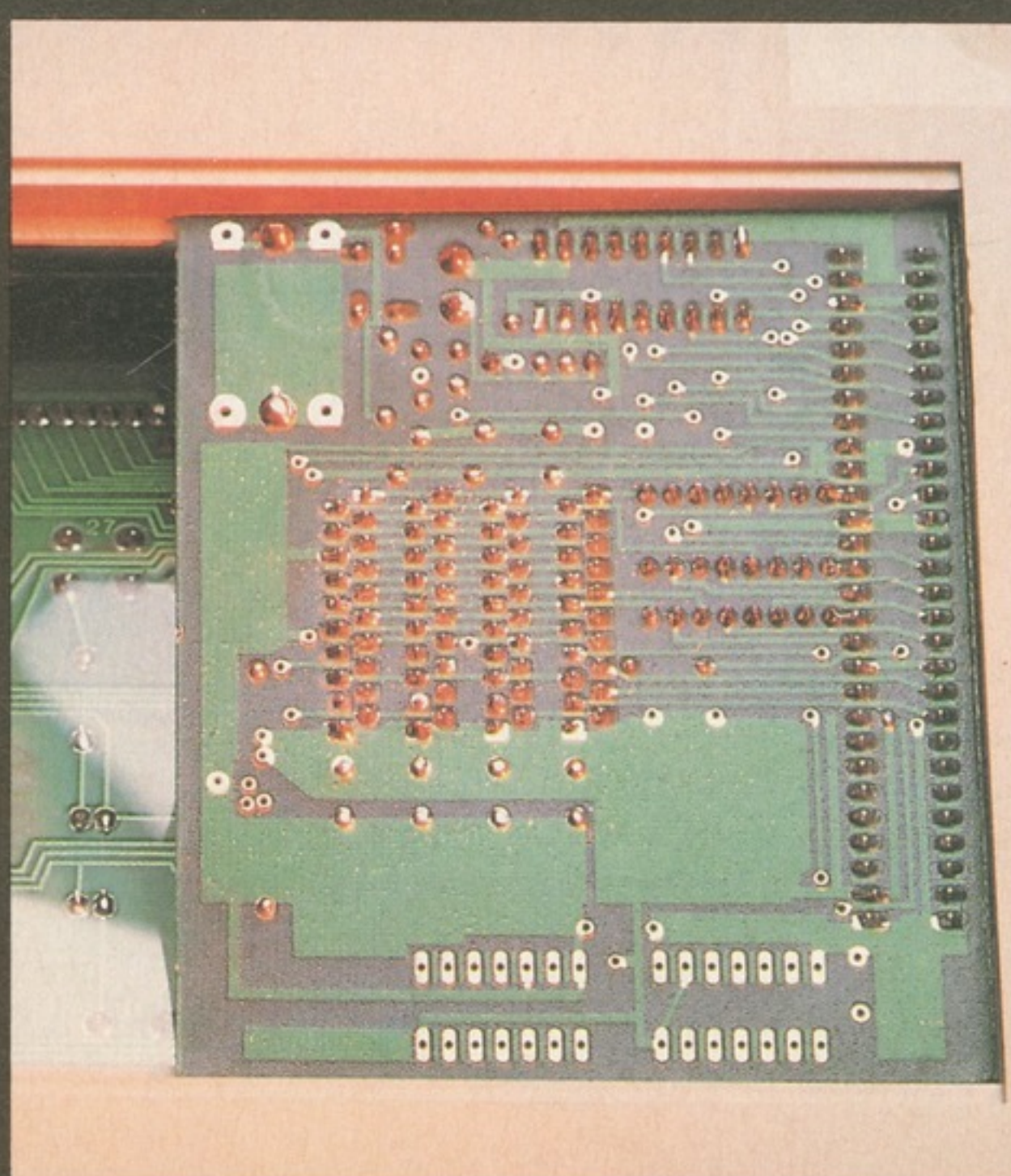
Extra storage capacity will allow

you take advantage of some excellent animation and music packages, increase the scope of many games, and improve DTP by leaps and bounds. Some programs that need the extra memory, or work much better with it, are:

- K-Roget, Kuma's thesaurus
- Fleet Street Publisher
- VIP, Lotus 1-2-3 clone
- SuperBase Professional database



• The RAM card is inserted component side down



• Pushed fully home the installation is complete



## 520ST-FM SUPER PACK



The Atari Super Pack is ideal for you if you want to get off to a flying start with the best in entertainment software. The Pack includes a 520ST-FM with 1Mb RAM, a built-in 1Mb disk drive, over £450 of top games and a joystick. If you buy the Super Pack at Silica Shop, we will add our own ST Starter Kit (worth over £200), Free Of Charge. Return the coupon for details.

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All prices correct at the time of going to press. E&OE.

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## WHY SILICA SHOP?

Before you decide when to buy your new Atari ST computer, we suggest you consider very carefully WHERE you buy it. There are MANY companies who can offer you a computer, a few peripherals and the top ten selling titles. There are FEWER companies who can offer a wide range of products for your computer and expert advice and help when you need it. There is ONLY ONE company who can provide the largest range of Atari ST related products in the UK, a full time Atari ST specialist technical helpline and in-depth after sales support, including free newsletters and brochures delivered to your door for as long as you require after you purchase your computer. That one company is Silica Shop. We have been established in the home computer field for ten years with an annual turnover in excess of £8 million and can now claim to meet our customers requirements with an accuracy and understanding which is second to none. But don't just take our word for it. Complete and return the coupon below for our latest literature and begin to experience the Silica Shop specialist Atari service.

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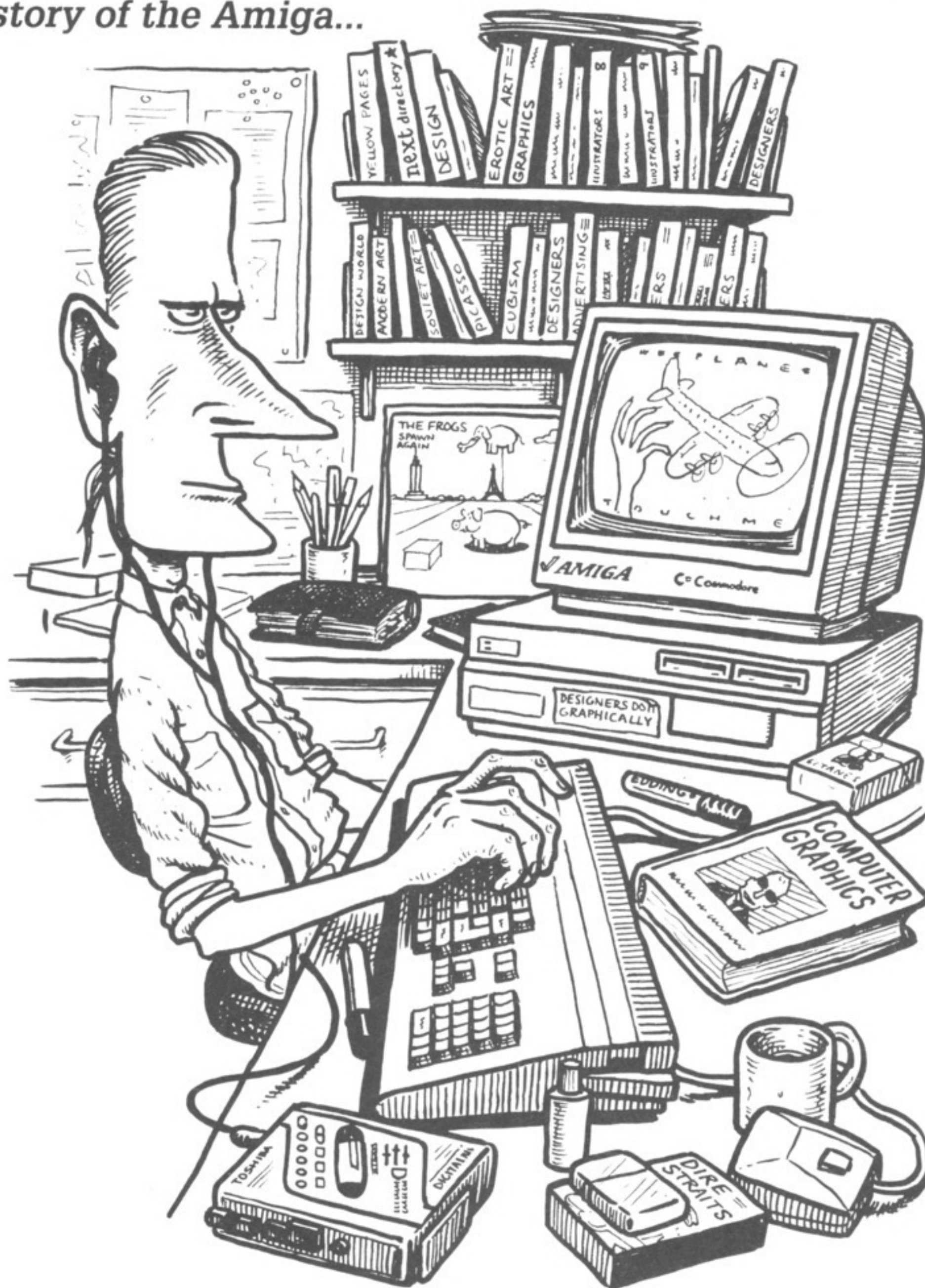
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*Originally designed as the ultimate games machine, the Amiga was first sold as an over-priced business micro. Fortunately the price eventually dropped, and ordinary home users had the chance to sample the Amiga's superlative audio-visuals at first hand. In the last of the Micro Biographies, Rik Haynes recounts the turbulent history of the Amiga...*



1977 • PET launched at Chicago Consumer Electronics Show in June.  
1981 • VIC-20 launched at Las Vegas CES in January.  
1982 • C64 launched at Las Vegas CES in January.  
1984 • C16 and Plus/4 launched at Las Vegas CES in January.  
1984 • Amiga Computer, Inc demonstrated Amiga Lorraine to a select few at Chicago CES in June.

- 1984 • Commodore purchased Amiga Computer, Inc in August.
- 1985 • C128 launched at Las Vegas CES in January.
- 1985 • Pre-production Amiga A1000 previewed to invited guests only at London PCW Show in September.
- 1986 • Amiga A1000 UK public debut at Birmingham Which Computer? Show in January.
- 1987 • Amiga A500 and Amiga A2000 launched at Hanover CeBit Computer Fair in May.

Unfortunately by the time they had a system ready to show to the world, the games console boom had disappeared – to be replaced by micros. It was lucky then, that the creators of the Amiga had taken its original specification to the nth degree, producing not only state-of-the-art audio-visual hardware but also beginning development on a complex operating system environment and all the extra trimmings that a micro requires (keyboard, disk drive, expansion slots, etc). The ultimate games machine had become the ultimate micro.

Unfortunately by this time, the costs of developing the machine, were becoming too great for the docs, so they finally decided to opt out of the computer industry altogether. So in-stepped former Commodore guru, Jack Tramiel, who had just bought Atari and was just looking for a machine to beat his old companies run away success, the C64. Weeks of heavy negotiation followed, but still no deal had been struck. Until Commodore suddenly popped up with an acceptable offer – and Amiga Computer, Inc was bought up in August 84. Lorraine was dropped, Amiga stayed though.

First off, they scrapped development on the Amiga's operating system (OS), and got an off-the-shelf OS and mixed the two together. This OS was incomplete and totally bug-ridden – today the Amiga is still prone to OS crashing and bugs, even with countless upgrades and new versions of its OS. Secondly, and probably more important,

**With its high public profile the Amiga has attracted so much publicity that it's hard to find any new snippets of trivia. Of course, we could mention the fact that Amiga's are used in the production of TV shows like *The Chart Show* and *Network 7*, the Amiga has possibly the largest collection of viruses on any micro, Amigas were used at the Bros concerts last year, zzz...zzz...zzz... See what we mean!**



## Get your tech specs here...

Amiga A500 • Motorola 68000 microprocessor running at 7.14 MHz • 512K RAM • 256K ROM • RAM Internally expandable to 1Mb, externally expandable to 9Mb • Built-in 3.5" disk drive (880K formatted) • Custom designed DMA (25 channel) audio-visual-controller chips (Agnus, Denise and Paula), graphic co-processor (Copper) and Blitter (high-speed data transfer) • Text 80x25, 60x25 • Resolution 320x256, 320x512, 640x256, 640x512 • Colour 320 pixels (32 colours) and 640 pixels (16 colours) from a palette of 4096 • Special HAM (Hold and modify) mode produces 4096 colours on-screen display • Hardware assisted facilities for sprites, scrolling and animation • 4 sound channels connected to right and left audio (Stereo) with 9 octave, complex waveform generation, amplitude and frequency modulation, and efficient sampled sound handling • Full size high quality typewriter style keyboard with separate cursor key cluster, numeric keypad and function keys • Mouse • Interfaces serial (RS232), parallel (Centronics), RGB (analogue, digital), video (monochrome), expansion port (free processor bus for extra memory, hard disk, co-processors), external disk drive port, genlock capability (mix video and Amiga images), right and left audio out, 2 Atari-style game controller ports

Commodore shifted the Amiga's emphasis completely away from the home user and onto the more lucrative (according to Commodore bigwigs) business side. So when the Amiga was finally launched in the States in 1985, only the most dedicated and affluent home user could afford the Amiga's extortionate asking price – power with the price.

Thanks to its high specification, the Amiga still managed good sales with it quickly achieving worldwide cult status. Commodore began work on a new version of the Amiga, upgrading its specification and moving further up the business

## Hard and Soft Options

**DeluxePaint III I Paint and Animation package • £79.99 • Published by Electronic Arts on 0753 46465**

*DeluxePaint III* (reviewed *Express* 20) is the latest version of the most popular Amiga paint package around. Requiring at least 1Mb of RAM, *DeluxePaint III* includes an impressive paint and animation capability, which is both easy to use and extremely powerful.

★★★★★

**MiniGEN • Genlock device • £99 (ex VAT) • Manufactured by Applied Systems and Peripherals (ASAP) on 0724 280222**

*MiniGEN* (reviewed *Express* 15) is one of the cheapest genlock devices available on the Amiga and its display quality – depending on the type of video equipment used – can be impressive.

★★★★★

**Digi-View Gold • Video Digitiser • £129.95 • Manufactured by NewTek, USA • Available from Amiga Centre Scotland on 031 5574242 or HB Marketing on 0895 444433**

*Digi-View Gold* (*Express* 17) is the latest version of probably the most popular video digitiser available on the Amiga.

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**Devpac 2 • Assembler/Debugging system • £59.95 • Published by Hisoft on 0525 718181**

8 hardware and software best buys for the Amiga

*Devpac 2* (reviewed *Express* 1) is an almost essential purchase if you want to program the Amiga using assembly language.

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**Amiga Hardware Reference Manual • £23.70 • Published by Addison Wesley • Available from SDL on 01 309 0300**  
THE READ for any serious Amiga programmer, giving full details of the Amiga's audio-visual custom designed chips.

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**Protext • Word-processor • £99.95 • Published by Arnor on 0733 239011**

*Protext* (reviewed *Express* 4) is a fast and flexible word processor.

★★★★★

**Denaris • Game • £19.99 • Published by Rainbow Arts/US Gold on 021 356 3388**

*Denaris* (reviewed *Express* 16) is a superb horizontally-scrolling shoot-'em-up with excellent coin-op quality audio-visuals and gameplay.

★★★★★

**Populous • Game • £24.99 • Published by Electronic Arts on 0753 46465**

*Populous* (reviewed *Express* 22) is a highly original and totally addictive game which is destined to become a classic.

★★★★★

ladder. This is where the old development team of the Amiga finally dispersed, and the new Amiga was born at Commodore's own plant at Braunschweig, West Germany.

## Get the balance right (finally!)

After making a botched effort with the Amiga's user direction – allowing Atari to milk the home market with its popular ST in some countries – Commodore finally saw the light in early 1987 when it not only launched the up-market Amiga

A2000 but also an affordable "520STFM beater" version, the Amiga A500. Finally, the home user could afford the power of the Amiga.

Sure, the Amiga still struggles against the tough competition of the ST, but with its superior specifications, worldwide support by software and hardware developers, and loyal user following – the Amiga is fast increasing its lead in the race. After all, as the computer industry currently stands, there's no other home micro to match the Amiga's balance between hardware capabilities and range of software... ●

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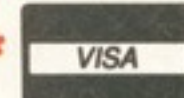
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# The Light Program

**How does a computer program work? How does it know what you want? Basil Pigg reveals the answers...**

**A**lways using commercial programs is like travelling by public transport – you can only go where they go. Writing your own programs is like owning a car – you drive where you want to, do anything you like with it and generally get a lot more use from it and have a lot more fun.

Computers are not very clever; they're just fast. The most advanced thing a computer can do is to add one and one (even then it thinks the answer is ten, because it works in base two). However, it can do this very quickly; even the most advanced game or graphics package does everything by adding one and one lots of times. Lots of beginner's guides waffle on about binary numbers and hex, but to be quite honest you could live to be 100 and never ever need to know anything about them. (That's 100 base ten, not 100 base two, which is 8, nor 100 base 16, which would be 256, nor...)

To understand what a computer program is like and what it does, imagine that you're trying to explain to Mr Spock's brother who's just come in from Vulcan how to make a cup of tea. Spock has never seen or heard of tea before but is totally logical and can follow instructions – if they make sense. He doesn't understand English, like a computer, but understands numbers and sums.

'Spock, pick up the kettle and put it under the tap,' you say. Pick up? Kettle? Tap? Ah. 'Spock,

the kettle is the thing on the table here.' Table?

You hit on an ingenious solution. You go around numbering every square inch in the kitchen; the kettle is at number 154, say, the cold tap at 172, the plug of the kettle at 23 and so on. You also get your Vulcan-English dictionary and beside 'bl%87-@@gjQ', which is the Vulcan for 'pick up', you write the number 24, and so on for other words you'll need.

'24 154,' you say. Spock knows that '24' means 'pick up', finds 154 in the kitchen, and picks up the thing which is there. '37 (which you've defined as move) 154 172,' you say. He 37s (moves) the 154 (kettle) to 172 (the tap), and so on.

## A nice little number

'91 (turn on) 172,' you say. Spock obligingly 91s (turns on) the tap and water pours over the kettle; you haven't told him to remove the lid yet, and Spock, being logical, only does what you say even if it doesn't make sense. So, you tell him to turn off the tap and remove the lid. What to do with the lid? He hasn't enough hands to hold the kettle and the lid. You'll want it back in a second, so you just want him to put it down somewhere temporarily while he fills the kettle with water. You might also have to take the plastic bowl out of the sink too, to make enough room to do it. The bowl and the lid go on top of each other in a stack on the draining board, and you have to take them off after the kettle is filled in the right order; Spock will try to put the bowl on top of the kettle and the lid in the sink if you tell him to.

And so you would continue with your list of instructions in this pedantic way. But you have to specify everything exactly or Spock won't know what he's to do. All computer programs are similar lists of instructions and work in this way – pedantically, exactly, specifying everything by

numbers. The computer 'knows' where everything is by numbering all the locations, just like you did in the kitchen, and the location is called the 'address'. The address of the kettle would be 154, the tap 172 and so on. Instructions all have numbers: moving something might have one number, decreasing it by 1 another, and so on. And computers also have only 'two hands' and have to put things down temporarily if they need both hands to do the immediate task. That stack of things you put on the draining board in computers is called the 'stack' too.

So, the recipe for making tea would look to Spock like a list of numbers: 24 154 37 172 and so on. Computers similarly work on lists of numbers like this, and a computer program is just a list of numbers, nothing more, nothing less.

But writing a recipe as numbers in this way would be interminably difficult. A bit easier for the human would be a list of keywords rather than numbers: pick up kettle, put under tap and so on. Then you could issue your instructions almost in English.

In computer terms, those horrible lists of numbers are machine code, and in the sense of being impenetrable the name is appropriate. Machine code is first generation language (1GL). Those little bits of English are called second generation language (2GL), because they 'generate' series of numbers, i.e. 1GL. A program written in such a way is said to be in 'assembly language' or 'assembler'. However, it must still be translated into those numbers before Spock can start to understand them – it must be 'assembled'. Such translations are relatively easy to do of course.

The instructions in assembler like 'pick up' would be written for brevity as PUP or something like that, and are called 'mnemonics'.

Unfortunately the numbers corresponding to each instruction are different for each machine, and addresses of course (just as the layout of kitchens differs) and the mnemonics for each different machine are different too. Learning assembly language is tedious and difficult and only works for one machine, but is clearly very powerful and you can make the machine do anything.

## Sage about time

However this all takes time and you don't want to have to go through the rigmarole every time you want a cuppa. Ideally you would just like to have one command: MAKETEA. Perhaps you could add a couple of things like how much sugar you want, whether or not to have milk. So your command might be MAKETEA(2,yes).

So, to save time later on, you write out on a sheet of paper all those instructions you had to tell him to make tea and head it MAKETEA(number of sugars,milk or not). Now whenever you want a cuppa you just say MAKETEA(2,yes) and Spock follows the instruction numbers under the heading. Simple eh?

This command is in third generation language, because it 'generates' 2GL. Clearly it's much more convenient for you because you only have easy to remember, concise commands. You're limited to the commands you've had defined, though, so it may not be quite as powerful as assembler. Third generation languages include everybody's



• If you can make a cup of tea then you can program a computer



favourite BASIC, C, Pascal and so on, and different 'implementations' of the languages will have different commands defined like this. So the command MAKETEA(no of sugars, milk or not) in Turbo BASIC might be MAKECUPPA(milk or not, no of cups, no with sugar) in BoredomBASIC and not exist in CheapoBASIC.

These variable quantities - number of sugars and so on - are called 'variables'. In a program, the number of sugars you take might be stored as "no of sugars". If you tell the computer at the start that "no of sugars" is 2, then it understands what you mean later by the command "place no of sugars in cup".

There is a price to be paid for 3GLs too in speed. Consider this make tea command; as it's going to be used in a variety of circumstances you have to check for all eventualities. To make sure you've got tea bags you might have to include instructions to look in the cupboard and check there's enough tea, sugar, milk, check that the kettle works and so on. This often adds unnecessary time to the tea making process - if you were issuing instructions 'on site' you would be able to see plainly if you had enough tea and so miss those bits out - but has to be there. Generally 3GLs are not nearly as fast as programs written in assembler.

4GLs also exist - programs which generate 3GLs, effectively programs which write programs. For example 'Write me a recipe for Japanese tea and then make some' might be the effect of a 4GL command. However, beginners always start on 3GLs, and for most of us that means BASIC.

### Nice interpretation

So, a program is a list of instructions. For example, a 'program' to prepare cream tea might include commands like MAKETEA(1,yes) and MAKESCONES(2) and LAYTABLE and so on, a bit like a recipe.

Having written your program in a word processor or text editor, you still have a bit to do. The text file you have written is no use to the computer, or to Spock - it has to be translated into the code you were messing about with earlier.

There are two ways to do this. Either you can get a Vulcan interpreter to read out your program line by line to Spock, translating it into code as you go, or you can get someone to write out the whole program as a list of code beforehand and present it to Spock when you want tea made.

The interpreted method is slower because the interpreter has to keep stopping to think how to translate each instruction, and Spock has to keep asking what to do next; the other method of compiling a list of codes beforehand is quicker because Spock has all the instructions there and can proceed as fast as he likes.

So with computer programs. You have your text prepared - the 'source code' - and now, depending on the language, you either have it interpreted or compiled. BASIC is usually interpreted; you prepare your program as a text file and then go into BASIC and type a command to run the program contained in your text file. The

instructions are interpreted one by one and your program is run.

With a language like C, though, you run a program called a compiler, which 'translates' your source code into a load of machine code and stores this as a new file - called TEA.COM, or TEA.EXE or similar. You then run this file just as you would run a commercial program - i.e. type TEA at the A> prompt, or double click on the icon or whatever. In fact, commercial programs are almost all compiled programs like this, prepared with a source code.

Source code is just a text file, which means you can easily transfer it from machine to machine. But you inevitably need to modify, say, ST code in Pascal in order to be compiled by a Pascal compiler on a PC, as some of the instructions may be different in the two implementations (and of course there are differences in screen sizes, codes understood by the printer and so on).

Your machine probably has a free BASIC interpreter on it, which is a great way to start dabbling in programming. Books on BASIC will abound in your public library. ●

## Technobabble

An Express assault on computer jargon

ASCII

### Assembler

Language one step above machine code consisting of unmemorable mnemonics like PUSH and RST and JPNZ

### BASIC

Everyone's first language. For the next pub quiz, remember that it stands for 'Beginners All-purpose Symbolic Instruction Code'

### Compiler

Program which turns source code into machine code (e.g. C, Pascal)

### Interpreter

Program which translates your list of instructions line by line into machine code (e.g. BASIC)

GL 'Generation language'

### Machine code

Instructions in the form of numbers understood by a computer

### Source code

Text file containing the instructions in the program, to be compiled later



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**ATARI ST (C):** Launched in 1985, this 16-bit machine has become a standard up-market home micro due to its built-in interfaces to link up with musical instruments, fast processor, expandability and the large amount of software available. General purpose micro excellent not only for games and leisure use but also for 'serious' applications such as word processing and programming.

Due to aggressive pricing and bundled packages it has outsold its

rival the Amiga heavily in France and the UK, but the opposite is true in the US and Germany.

**ATARI 8-BIT (C):** Several releases beginning with the 400 in 1979 and proceeding in the next few years through the 800, XL and XE, which offered a market demanding increasingly high powered machines too little, too late.

Still a reasonable following of users who enjoy a wide range of software available through mail order.



• Atari's ST has dominated UK and French markets



**BABBAGE (P):** Charles Babbage (1791-1871). He was responsible for the Analytical Engine, a mechanical, programmable device utilising a store for answers and used to calculate general mathematical problems. Unfortunately, the analytical engine was too complex for the engineers of the day to construct, and so never reached fruition.

After working for most of his adult life on the project, Babbage died without seeing his machine come to life. See also **Lovelace** and **Ada**.

**BALANCE OF POWER (G):** State of the art wargame in which you run the USA or USSR and try to get the balance of world power. Has become the benchmark against which other world strategy games are measured.

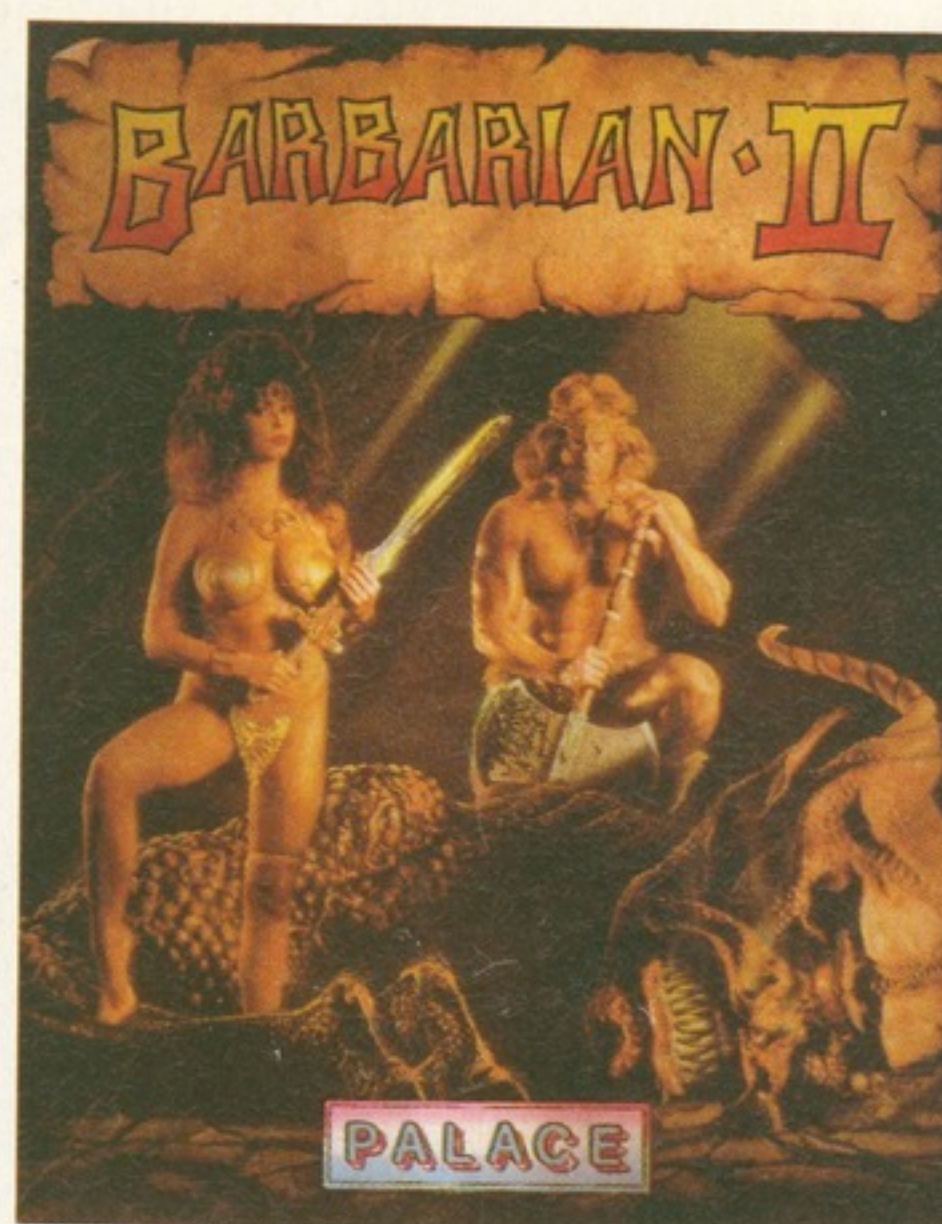
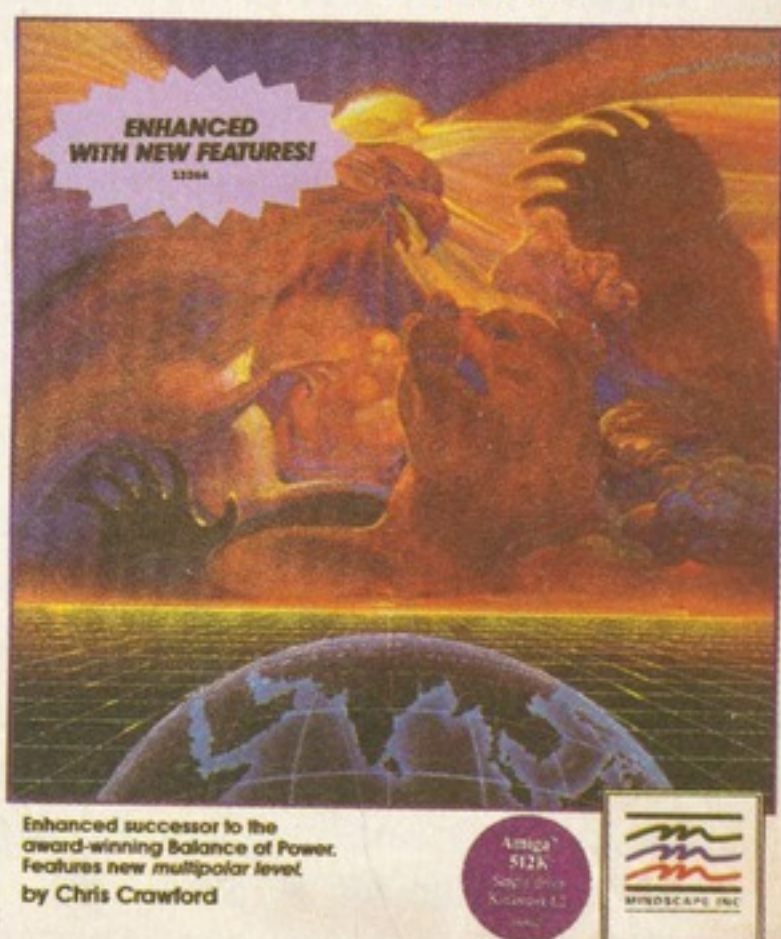
**BACK-UP (T):** Generic term to describe the process of copying the contents of a hard drive to floppies or tape streamer in order to protect against loss of data – a frequent occurrence.

**BALL BLAZER (G):** Futuristic split-screen ball game designed by Lucasfilm which was their first stab at micro computer software.

**BARBARIAN (G):** Sword fighting hack-em-up from Palace with minimal gameplay but maximum skin exposure in the form of Ms. Maria Whittaker clad in sauce-pan

## BALANCE OF POWER

THE 1990 EDITION



lids and leather G-string and a male cohort in nothing but a loin-cloth and mean glare. Despite the dreadful packaging, the graphics and sound are well implemented with smooth scrolling figures and digitised grunts.

To provide confusion Psygnosis brought out an arcade adventure, also called *Barbarian* but otherwise completely unrelated.

**BARD'S TALE (G):** Popular interactive role playing game with traditional *Dungeons and Dragons* style fantasy scenario.

**BASIC (L):** BASIC is everyone's first programming language. Devised in the mid '60s by John Kemeny and Thomas Kurtz, BASIC was intended to be used – not surprisingly given its name – by novice programmers to learn the rudiments of programming.

Although BASIC is still scorned as a 'toy' language, easy to use but slow, improvements over the last five years have made it very popular for data processing applications. It is the single most used computer language in the world. Now it's becoming fashionable again and with the development of very high speed processors such as those on the Archimedes it is possible to write arcade games in BASIC.

This routine prints the message in line 10 one hundred times:

```
10 a$="I must not talk in class"
20 FOR X%=1 TO 100
30 PRINT A$
40 NEXT X%
```

BASIC is an acronym for Beginners All-purpose Symbolic Instruction Code.

**BATCH (T):** A term used to describe the processing of several 'jobs' by a computer in consecutive fashion – the equivalent of the instruction 'make the beds, then do the washing up, then when you've finished that, Hoover the carpet'.

Batch processing was originally employed by early computers. An operator would 'feed' the computer with several jobs via punch cards. The machine would then process each job

until all the jobs had been completed.

**BAUD (T):** A measure of data transmission rates – how fast information is being transferred between media, for example from one computer to another via a cable. Baud rate is determined by signals per second and not bits per second as is commonly (and mistakenly) assumed.

Typical baud rates are 300, 1200 and 2400 signals (typically a few dozen words of text) per second. See also **Modem**.

**BBC (CO.):** The British Broadcasting Corporation, which was

responsible for sponsoring the

micro-computer of the same name, manufactured and marketed by Acorn, and used in conjunction with their computer awareness series of the early '80s. Designed with school use in mind, the machine had lots of user ports for expansion, easy



• Acorn's BBC micro. Was it overpriced?

networking and a fast and structured BASIC. Did not succeed in the home market as it should have done, because (many said) it was overpriced. Nowadays thought of as an enthusiasts' machine.

**BBS (T):** 'Bulletin Board System'. The bbs is a kind of electronic notice board upon which other computer users can post messages and transmit and receive programs via a modem. See also **Modem** and **Baud**.

**BCS (P):** British Computer Society, the leading organisation for computer professionals. The BCS monitors standards in the industry, makes awards and bursaries.

**BCPL (L):** Programming language notable only for its later evolution into C (see **C**).

**BEACH HEAD (G):** Multi-action wargame which was the first game imported by US Gold from the United States. The game features multi stage action with smooth graphics and well implemented sound and placed US Gold firmly on the map.

**BETA TESTING (T):** Method of testing new software in which the software house responsible releases the product to selected customers who try it out and report back on any bugs found.



**BIG APPLE (CO.):** Founded in mid '88 in a flurry of T-shirts, advertising and assorted razzmatazz, but has unfortunately come to nothing in the way of products.

**BIG BLUE (CO.):** The – American – pet name for one of the biggest companies in the world: International Business Machines, or IBM to you and me. For details see **IBM**.

**BIOS (T):** Basic Input Output System – the operating system 'level' between the user interface and the machine level. The routines that deal with the disk and memory accessing, printing to screen and so on. Bios is usually used in reference to IBM-PC and compatibles.

**BINARY (T):** Number base two, used to represent data within a computer (normal counting is done in base ten). In binary, 10 is two, 11 three, 100 four, 101 five, and so on ad nauseam.

**BIT (T):** A bit is the smallest possible piece of data which can be represented by a computer, and can be 1 or 0. Bits are gathered together in groups of 8 to make a BYTE. An acronym for Binary digiT. See also **Boole, Byte**.

**BITMAP (G):** An area of computer memory reserved for graphics. The bitmap area of memory is used to hold the picture being displayed on screen. A bitmap version of the screen printed out would be exactly the same as the image on screen, dot for dot.

**BITMAP BROTHERS (CO.):** Purportedly the hippest programmers around, known for their hardy perennials *Xenon* and *Speedball*. Street credibility the size of a small planet, and probably egos to match. Currently working up a sequel to *Xenon*. First successful attempt by a software house (Mirrorsoft) to overhype a programming team.



• Bitmap Brothers: hip 'n' trendy programmers of *Xenon* and other hits

## BITS & BYTES

**(CO.):** An example of the efficient new crop of micro shops springing up around the country. The shop is based in Liverpool and has a huge range of everything necessary for the micro enthusiast: software, hardware and peripherals.

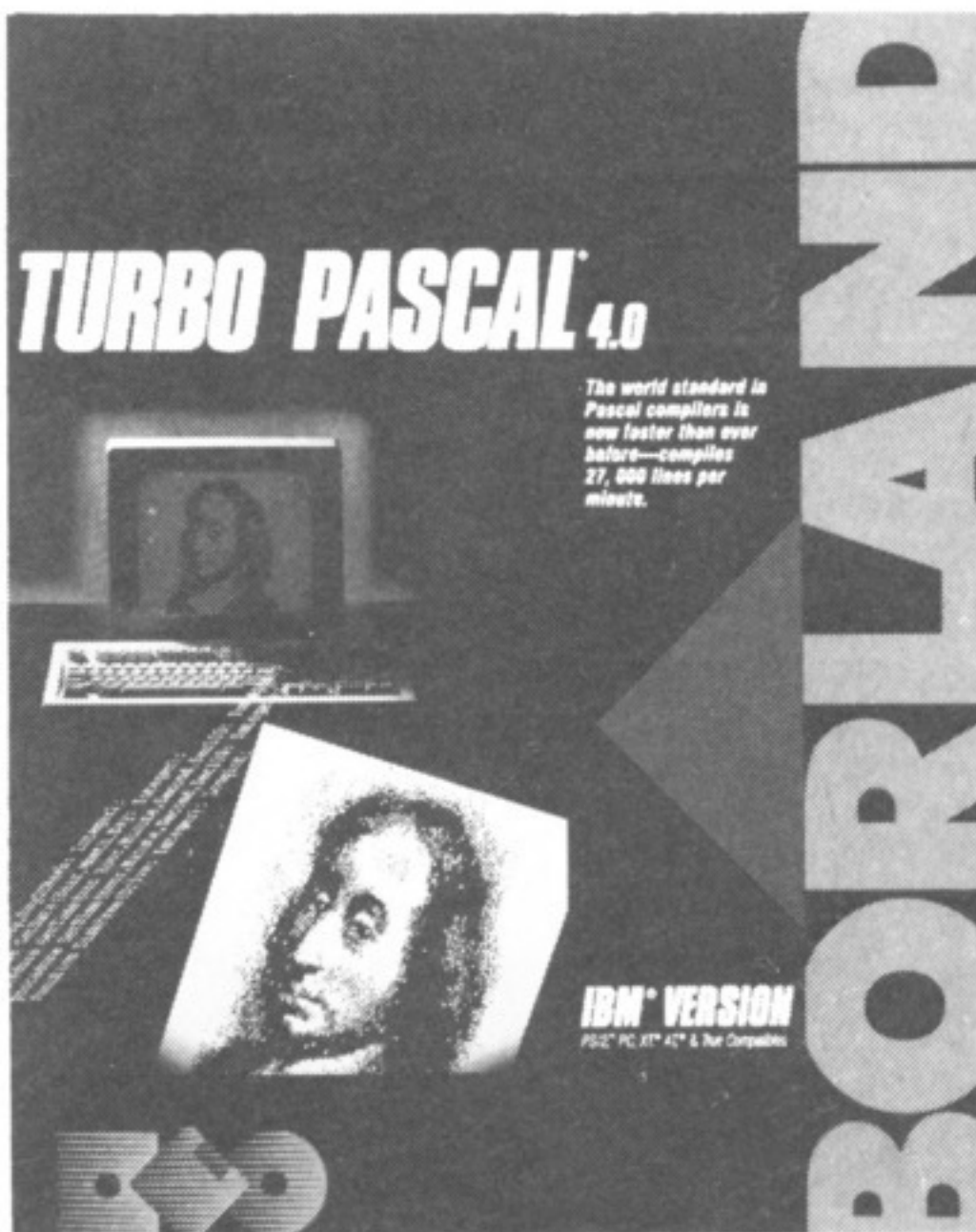
**BLITTER (T):** An integrated circuit employed in the new breed of 68000-based 16-bit machines which speeds up the processing of on-screen graphics by moving around large 'chunks' at once, rather than individual points ('pixels'). See also **Pixel**.

**BMF (P):** British Micro Federation. The BMF is a trade organisation set up to promote the world of small computing, responsible for standards within the industry, liaising with customers and the trade. Currently writing a code of practice.

**BOOLE (P):** Scottish 19th century mathematician responsible for the form of algebra that bears his name. Boolean algebra is concerned with the definition of logic propositions which can be either true or false depending upon their state. As this can be represented easily in binary digital form (1 for true, 0 for false) it is at the heart of most computer languages. See also **BIT**.

**BOOT (T):** A.K.A. Bootstrap. Fragment of code, held in the ROM of a computer, which is executed each time the machine is started or 'booted'. Tells the computer where to look on disk to find the rest of the operating system.

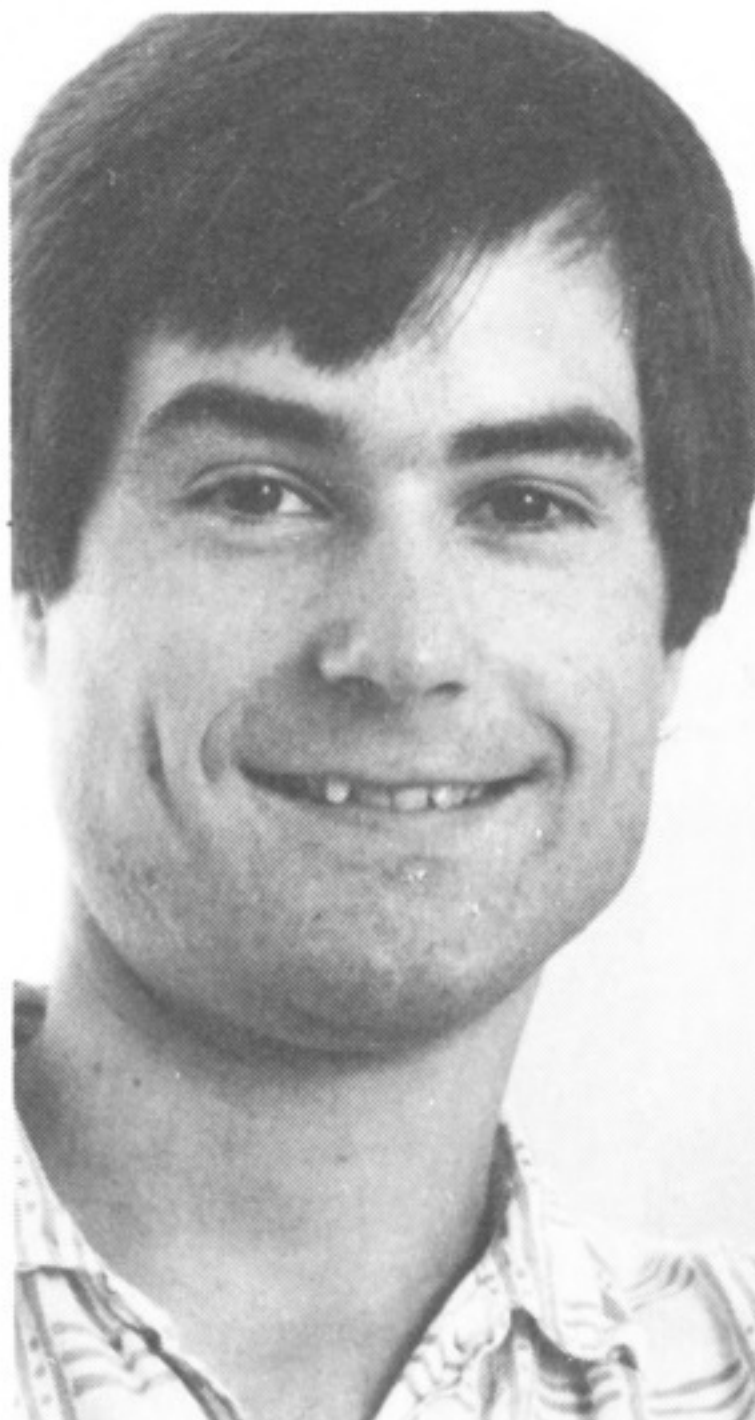
**BORLAND INTERNATIONAL (CO.):** Founded by Philippe Khan, the



• Borland: Famous for compilers

company is responsible for some excellent language products such as compilers in the *Turbo* series. Also responsible for the evergreen *SideKick*, a desktop utility for the PC.

**BRABEN, DAVID (P):** Rich and famous and rich and rich and famous (...you get the idea?) programmer responsible for the popular evergreen *Elite*.



• David Braben: Celebrated programmer of *Elite* and *Virus*

*Elite* has become a classic of the space trading games genre, and gaming generally, and is available for almost every micro. Braben also wrote the game *Virus* and is – reportedly – working on *Elite 2*.

**BREAKOUT (G):** An early arcade game. A large portion of the screen is taken up with rows of 'bricks'. The player has to hit a ball they are keeping in play with a bat, against the bricks until they are all gone, or they have lost all available balls.

Lots of variations on the theme have been produced but the best offering is *Arkanoid*, with well-paced gameplay and late-eighties graphics capabilities. See also **Traz**.

**BROTHER (CO.):** This large Japanese company is responsible for a large quantity of products, but is best known for its range of printers.

In the early '80s the company designed and marketed the Brother HR5 printer. The machine was very small and battery operated allowing it to be carried around anywhere. Although popular, it faded into



• Brother: A Japanese company famous for its line of printers

obscurity largely due to its use of thermal technology for printing which gives relatively poor quality print when compared with similar priced machines.

**BUBBLE BOBBLE (G):**

Converted cute coin-op classic in which the player adopts the role of a dragon who releases bubbles in which to trap objects. Well implemented and very popular.

**BUBBLE BUS (CO.):** Extreme example of the one-shot software house of the early '80s. The company had a huge success with *Starquake*, available for a range of machines, and then faded into relative obscurity.

**BUFFER (T):** An area of RAM in a computer or device such as a printer, which is set aside for the purpose of temporary storage for data.

The concept of a buffer is usually associated with data sent to a printer. Data is held in the buffer until it is printed, thereby freeing the computer for other tasks.

**BUG (T):** Mistake or error within a computer program causing unfortunate results, ranging from the annoying (e.g. #s being printed instead of £ signs) to the disastrous (satellites diving fatally out of orbit, as happened to a Russian probe to Phobos this year). See also **Debug**.

**BULLETIN 1000 (GG):** The videos used by several large retailers to demonstrate and advertise new computer games.

**BUS (T):** A path for data made up of electrical signals to be transmitted through the internal architecture of a computer; the physical route taken by data in your micro through the machine.

**BYTE (T):** A gathering of 8 'bits' of binary data. The byte is used as a measurement of space in the computer's memory or on a disk, and is sufficiently large to store one character or whole number less than 255. See also **Bit, K, Mb**.



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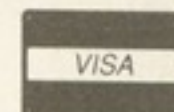
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# Tass Times in Tone Town

**With the introduction of digital exchanges, telephone technology is being revolutionised and new hardware and software on the way is realising its potential. Plugging his PC directly into a phone socket, Andy Storer calls the shouts**

**T**he first digital telephone exchanges were introduced in Britain in 1983, allowing the old pulse system to be gradually replaced by tone dialling. By 1995, British Telecom's System X Digital Exchange Network will cover all 6,000 local exchanges and provide faster connect times, clearer lines, automatic transfer of calls and greater reliability. And that's just for starters.

System X is BT's adaptation of ISDN (Integrated Services Digital Network) – a telecommunications network standard adopted worldwide. The major advantage for computer users is that digital systems will facilitate direct interaction between phone networks and PCs, allowing for far more than just voice and modem data transfers.

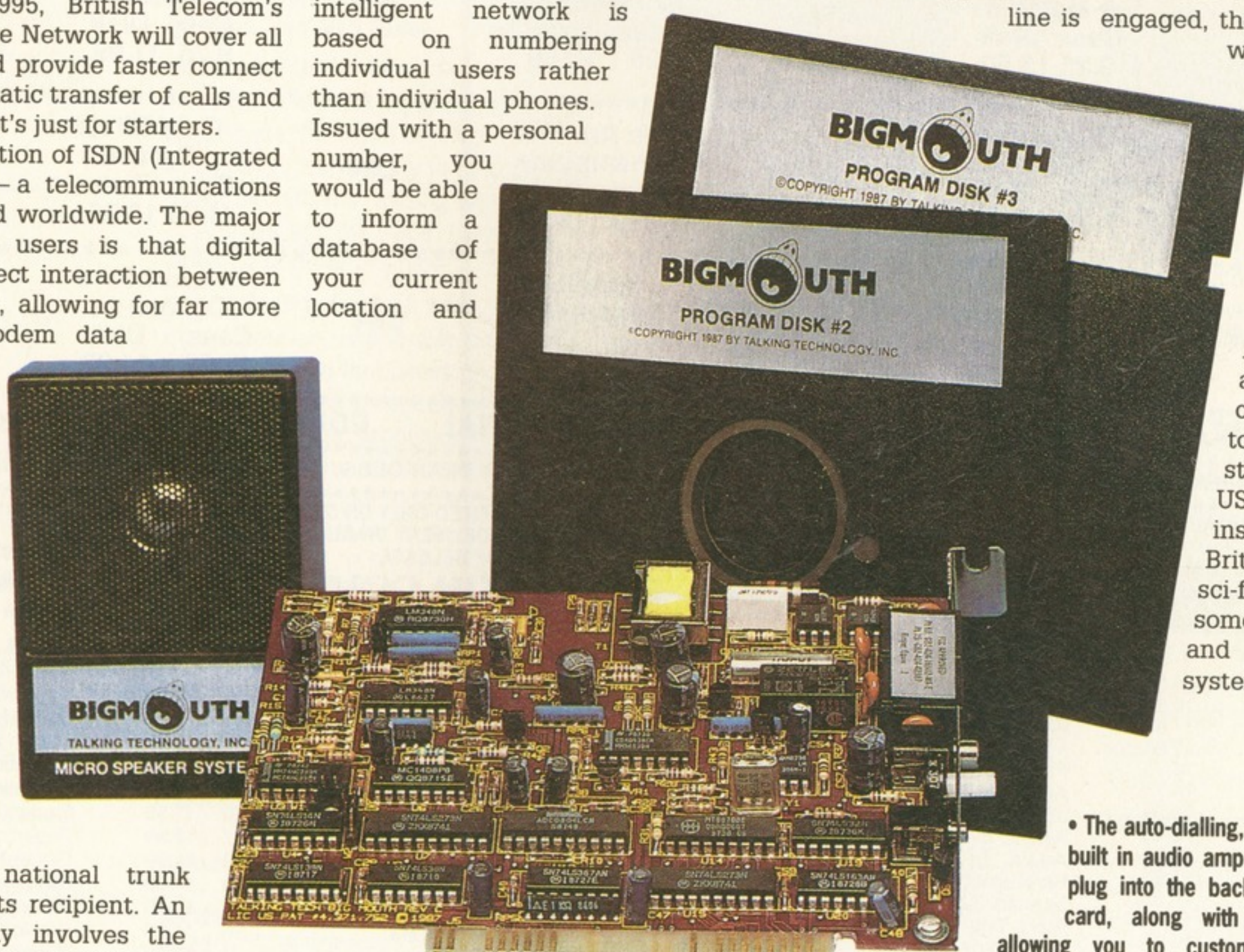
Voice transmission will be of digital sound quality and as fibre optic cable replaces the old copper wires, on-line information services will include hi-res video material. All hail the videophone.

Running alongside these developments are those of intelligent phone networks. In a standard network, a call is transmitted to the local exchange to be rerouted, through the national trunk network if necessary, to its recipient. An intelligent network simply involves the inclusion of mainframe databases which

the local exchange consults if the call has a specific code. Although this is the way in which 0800 freephone numbers are dealt with, a true intelligent network is based on numbering individual users rather than individual phones. Issued with a personal number, you would be able to inform a database of your current location and

have calls redirected to you. You would also only be charged for those calls you personally make, as opposed to those made on your phone, and if a line is engaged, the system could tell you when the person is available.

Or when the computer you're calling is available... For digital phone networks allow for much closer contact between humans and computers, and several American companies are bringing out PC cards that utilise the tone dialling system standard throughout the US but as yet only installed in a quarter of British exchanges. Whilst sci-fi videophones are still some way off, Voice Mail and Call Processing systems are already here. ●



• The auto-dialling, auto-answering Bigmouth has built in audio amp and external speaker which plug into the back of the 1/2 length plug-in card, along with a toolkit and interpreter allowing you to customise voice and telephone applications

## Bigmouth Strikes...

Bigmouth, from Talking Technology of Oakland U.S.A., is a PC card designed to allow your computer to answer the phone with any message you want and sample messages from callers at 8.6KHz for later playback. You can also dial in remotely with password security and retrieve messages.

However, where Bigmouth really comes into its own is in providing a telephone answering system for a number of people. Each nominated user can be assigned a mailbox where messages to and from callers can be stored and retrieved. The system's auto-dialler can inform users when a call is being held, allowing them remote access. As such, it's a cross between an automatic switchboard and a mini Telecom Gold.

In addition, Bigmouth incorporates several other interesting features – you can configure its screens to ask questions and record responses via phone keypad, not only for

Bigmouth Copyright (c) 1987 Talking Technology, Inc. 8-01-87 7:28:09PM

STATUS - Box 000000 Arrow Keys Set Bar, <ENTER> Starts & Aborts Messages

0	New Messages	Answer on Ring	2	Distribution	OFF	Forwarding	OFF
0	Hangups	Speaker	ON	Alarm	OFF	Local Phone	ON

NEW Events Below			OLD Events Above		Start	7:29:04P	8-01
1	Greeting Message	Box 0	T=00:09		3:06:28A	8-01	
2	Out of Disk Message		T=00:05		8:18:12P	7-30	
3	Distribution Message		T=00:45		8:47:17P	7-30	
4	Alarm Message		T=00:23		8:53:27P	7-30	
5	Old Msg A417	Box 0	T=00:13		2:41:23A	8-01	
6	Old Msg A418	Box 0	T=01:11		3:03:22A	8-01	
7	Old Msg A419	Box 0	T=02:03		1:07:19P	8-01	

DEL - Delete Msg F1 - Wait For Calls F3 - Autodialer F6 - Print F10 - Exit  
INS - Undelete F2 - Review Messages F4 - Review All F7 - Move ESC - Main

• A Status screen from Bigmouth shows the ease with which the menu driven system can be configured

incoming calls as an automatic order taker for example, but in auto-dialling mode too. So you could set it up to do some market research for you!

An alarm function, achieved by hooking your PC to your security system, completes the range on offer. If the circuit is tripped, Bigmouth will call three predetermined numbers with

warning messages. A dual disk system is capable of holding about ten incoming calls so it'll only really be worth a purchase if you have a hard disk.

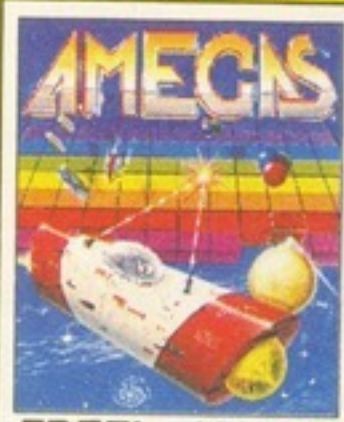
If your local exchange is tone based you can call Bigmouth on 0202 813073 for a demo. Otherwise try Staria on 0202 813141 for some human info. Bigmouth is available for £649.

## Vocatel vocals

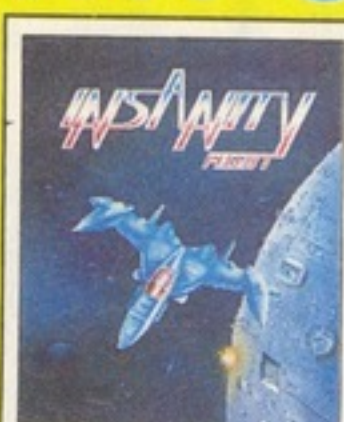
French company Sefer's Vocatel system offers some of the features of Bigmouth – it can answer calls, deliver personalised messages and store answers – but it takes interactivity a stage further. Whereas Bigmouth relies on processing a phone's dialling keys to trigger some software commands, Vocatel actually processes human language. To preclude the need to learn speech and dialect differences your input is restricted to two or three word phrases. But the PC-based system will recognise up to 100 words and extract appropriate replies from 30 minutes of digitised speech held on 12 MBytes of hard disk. We can't say how it will cope with English, but if you have £2,000 and/or an interest in voice processing then why not give Sefer a call on 010 33 4951 2960. You can always try Franglais.



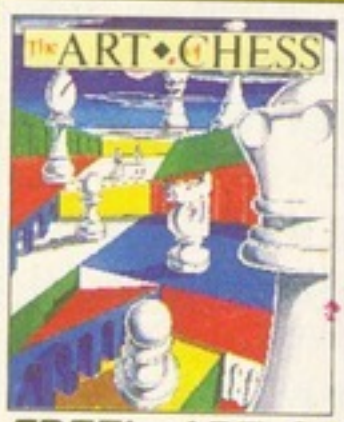
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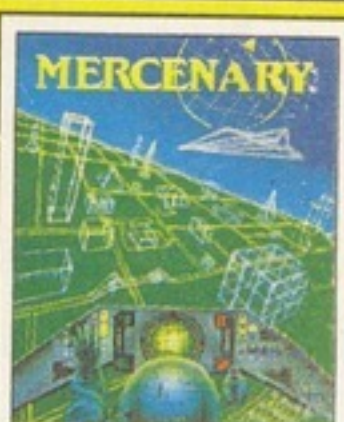
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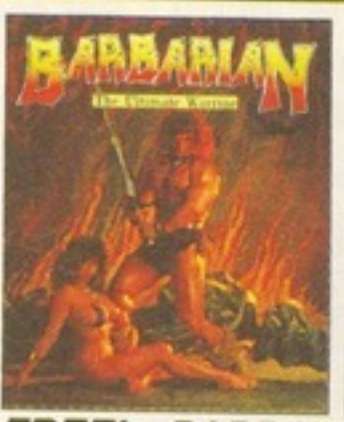
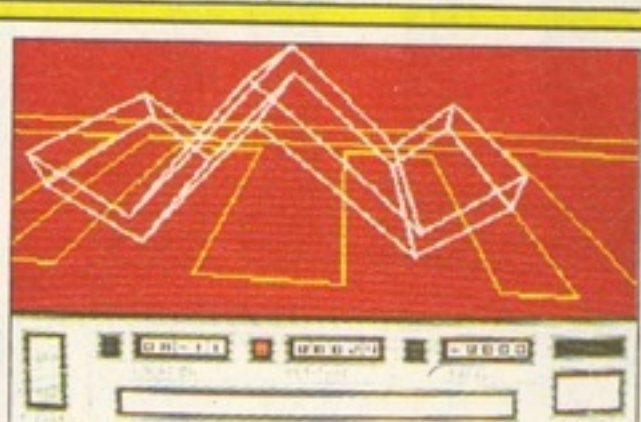
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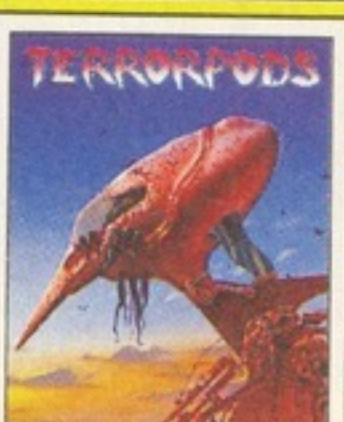
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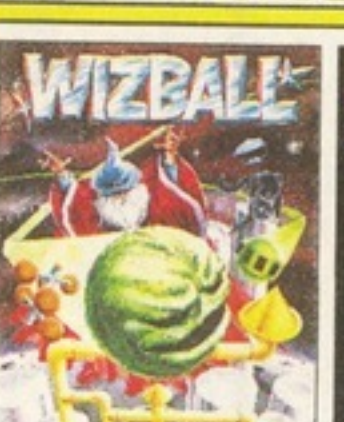
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# Talk talk

**Computer communications and networking are two of the most confusing and jargon-ridden areas of computing. Can those books in your High Street bookshop make it all clear to the budding comms user and business networker? Ron Peck flicks through...**

Computer communications is an oft-discussed subject, and many micro owners must wish they knew more about it – what use it is in the first place, what you can do with it, how to go about using all these wonderful services like multi-user games and Prestel and Micronet and so on.

If you believe the stereotype images, you need a lot of equipment to be able to indulge in computer communications: anorak, National Health glasses held together with elastoplast, and the *Observer's Book of Trains*. It comes as a surprise to many to find out that comms users are just as normal as you or me (well, me anyway) and the only bar to getting on-line is the odd bit of equipment and a few words of jargon. Or, to be more accurate, several hundred words of jargon...

Networking – linking several computers together to give them common access to powerful facilities – is clearly dependent on comms techniques. It can revolutionise an office, but is still wrapped in mystery.

There are several books on the market promising to enlighten the ordinary micro user about the mysteries of comms and networks. How do they stack up?

**Communications and Networks ● Phil Croucher ● £11.95 ● Sigma (0625 531035) ● ISBN 1-85058-136-3**

Croucher sets out to explain comms and networks to those already familiar with their own PCs who want to extend their knowledge – which must cover most of us. This new book is in two separate sections, one for each subject.

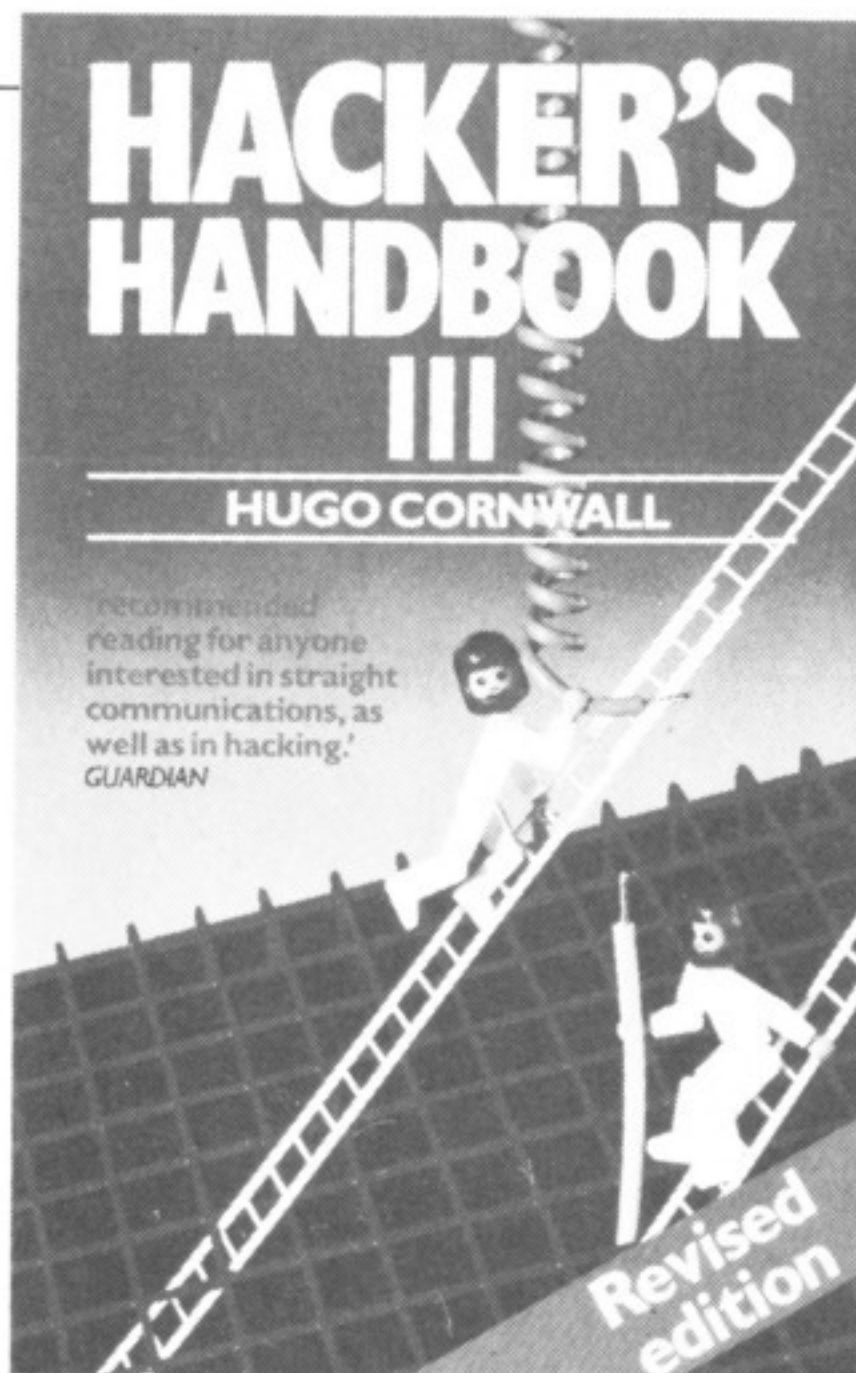
Croucher makes a valiant attempt at taking the

reader through the jargon-ridden world of comms, and it's almost normal English. How about 'multiplexing... is like driving round the M25, disastrous if you're not going the same speed and direction as the rest of the traffic'!

The book is admirably comprehensive and covers just about everything on the technical side, starting from definitions of a bit and byte and going on up to modems, pinouts, bulletin boards, baud rates, protocols etc etc. There are hints on how to set up your own bulletin board and even recommendations of which software packages to buy. There's a detailed section on sending faxes as well.

The networking section is again comprehensive and pleasant to read, though the experienced networker might find a couple of eyebrow-raising parts (is a false network consisting only of swapped disks called a 'sneakernet' by anyone else? And surely servers can be non-dedicated, used effectively as terminals to themselves?). But these are niggles really, and it reads perfectly OK. An ideal introduction for the office manager who wants to understand the concept and practice of networking.

All in all this is well written and gives a comprehensive coverage of comms and networking. The sheer amount of information to be taken in means it will need a lot of re-reading, but that's the fault of the subject rather than the way it is handled. The only grouse you can have is that there are few illustrations, other than a small number of boxes and wiring diagrams. Comms is admittedly not the easiest



thing in the world to produce pretty pictures for, but a few (say) sample screens from bulletin boards or Prestel might have jollied things up a bit.

A good general book, and to any micro owner who wants to know what this comms business is all about, this is certainly one of the best around. Unlike many of the other intros on the shelves, Croucher is not only knowledgeable about his subject, he's interested in it, and communicates that interest to you.

★★★★

**Hacker's Handbook III ● Hugo Cornwall ● £6.95 ● Century ● ISBN 0-7126-1147-9**

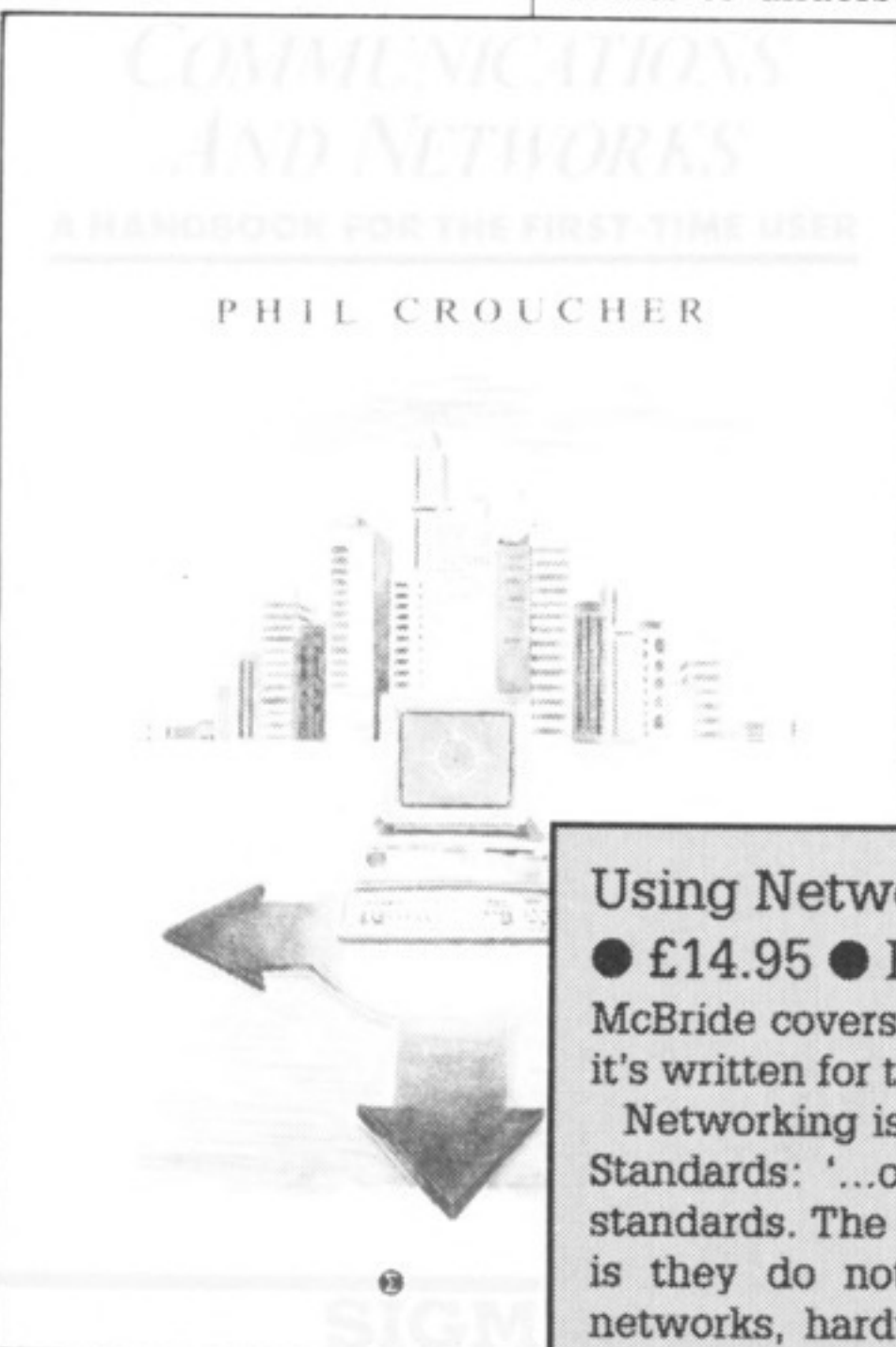
The hackers handbook – notorious since first published in 1985 – has recently undergone revision and is now available as the *Hackers Handbook III*, packed full of information for anyone interested in the murky world of computer infiltration.

When first published in 1985, the book attracted a lot of attention from the media – and the police – due to some quite provocative passages detailing the nuts and bolts of hacking. After a few months in print, circulation was stopped and the book revised, with several of the more sensitive pieces removed. In the light of the imminent anti-hacking legislation (see this *Express*, page 2) many further cuts may be necessary for subsequent editions.

In spite of the revisions, the new book is a jolly good read for anyone even vaguely interested in comms. And don't let the title fool you, this book covers all aspects of setting up a modem and comms software and getting on-line, as well as the slightly more shady areas of breaking in to computers belonging to educational and other establishments.

For all techie fans who want to get on-line, this is highly recommended.

★★★★



**Using Networking and Communications Software in Business ● PK McBride ● £14.95 ● Heinemann ● ISBN 0-434-91274-3**

McBride covers networking first, comms second. In fact, the main emphasis is on networking and it's written for the office PC user rather than the interested home micro owner.

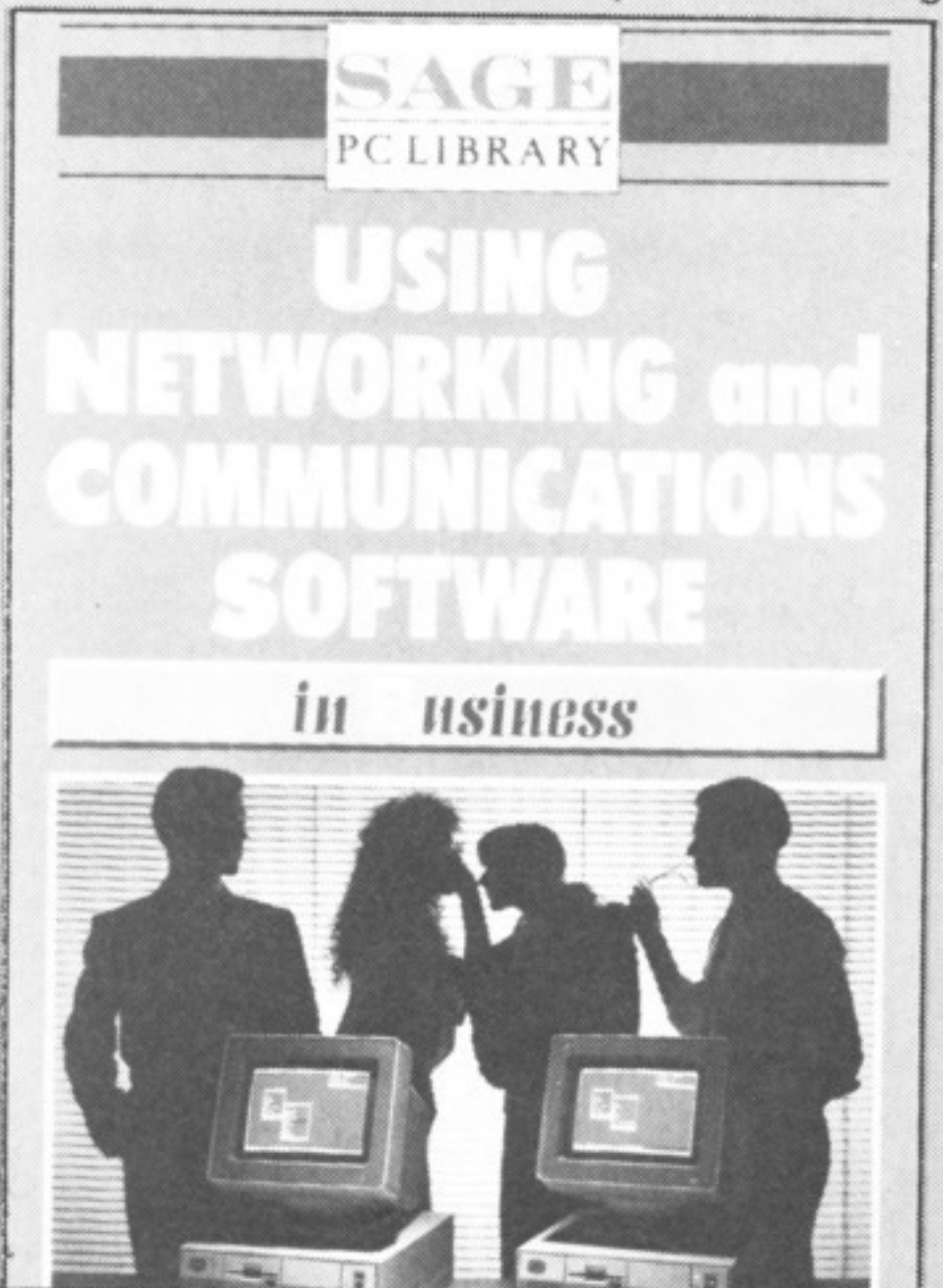
Networking is covered in detail but the style is clear, efficient and businesslike. (On Networking Standards: '...only two things are important about standards. The first is that they do exist: the second is they do not really go far enough.') Types of networks, hardware requirements, and importantly costings, are all explained well. The general layout is clear and easy to read through.

The book contains plenty of easily comprehensible examples and is well-illustrated (lots of screen shots plus example screens from Prestel and the home banking service that comms users can enjoy). There's also a good glossary and supplier's list at the back.

Overall a very well thought out and clear book. The section on comms seems a little bit of an anticlimax and is an added extra rather than a buying point; this is a book on networking. It achieves its aims nicely though and is an ideal introduction to any business.

★★★★

**Our thanks to Waterstones of Bath for their help with the books.**





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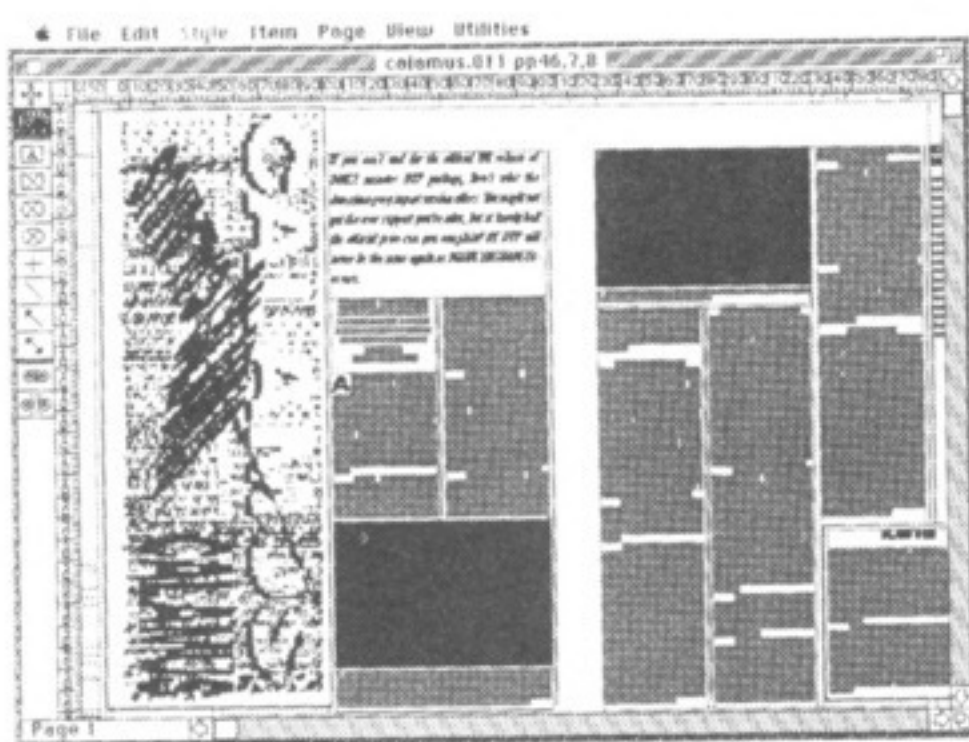
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[illegible]

It's possible to partition part of your ST's hard disk for use by Spectre. What's remarkable is that access time is faster even than a hard disk-endowed Mac.



● **Protext V4.20:** Although not touted as a major upgrade (that being promised in V4.30), the manual has been completely revised and reorganised, Pressing [Alternate] D or [Alternate] T will insert the current date or time respectively into the text, the cursor may be positioned by moving the mouse pointer and clicking, installing new printer drives has been greatly improved, a faster CONVERT program is included, Greek letters may be accessed from the keyboard, a scroll lock feature has been included and a clock may be added to the status line to display the current time. That's not what I call a minor

Adrian McHerriot

Look out for the Xenon II from the Bitmap Brothers. I've seen it in its near-complete state. Imagine three-plane parallax scrolling, countless moving objects and better graphics than Xenon. It looks stunning - better than anything that's been before.

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## YOUR FORMAT MACHINE-SPECIFIC COLUMNS

# PC UPDATE

### And PC will speak unto PC

If you have two PCs, or a laptop and a desktop, you can do one of two things to transfer data between them. You can use a disk, but then you have to make sure that both machines have the same type and capacity of drive, or you can connect the two machines together with a serial lead. The only trouble with the second approach is that you then enter the spine-tingling world of COMMS! I've seen grown men pull their own heads off rather than try to get a text file across a 9600 baud cable.

What is needed is a simple serial communications program with an understandable interface which will speed the whole operation up. *Lap-Link* fits the bill admirably. The package consists of two disks with the software on them, one in 5.25" format and the other in 3.5", a manual and a serial lead. The lead is terminated at each end with both types of serial 'D' plug, so you should be able to connect any PC to any other. Connect them through the comms ports, run the software on each and away you go.

The display screen is divided into two vertically, one half showing the directory of the local machine, the other the directory of the remote one. You can operate the software from either end, and move around the directory structure of either machine. It's something like magic to see the screen of the remote machine responding to commands given on the local one. There's only a moment's hesitation, as well, as the serial link works at 115,200 baud.

The main purpose of *Lap-Link* is to transfer files, and there are facilities to tag and copy just about any combination you can think of. You can make and erase directories, copy whole disks, call up a tree display to work around the directory structure and copy whole disks in one go. All in all, it's a great little program, though not a snip at £99.95. Search for a discount.

### Security check

Most people probably know that the /V parameter, used with a COPY command, verifies that the copy is a true and accurate record of what was in the source file. It's a bit of a pain to have to remember the parameter, though, and useful to reflect that the VERIFY command can be used to turn verification on and off for all subsequent disk operations. VERIFY ON invokes the check and guess what turns it back off again?

### Amiga, Pah!

Indulge me if you will. Those with a 386 machine sitting on or under their desks will possibly be looking at ways to organise their programs. You can run a 640K DOS partition, some EMS memory and a number of pop-up TSR programs for your word processor, appointments scheduler et al, but Liz Hall at PhaseStrong (0705) 511673 would have you consider an alternative approach.

The company has started selling a product

## Fortune cookies

"The Atari ST is the Ford Cortina of the computer world" says Steve Lee. If so, and the Amstrad CPC is the truckers' delight, what is the PC? Answers on a postcard to PC Update.

called VM/386. Don't let its catchy little name confuse you, though, for this is a very useful piece of software. What it does is to make use of the 80386's virtual 8086 mode to multitask your PC. The virtual mode of the 80386 is a way of dividing up the processor's time between separate segments of memory and separate PC applications. The interesting thing about it is that the system is integrated into the hardware, which means a crash in one 'virtual machine' (VM, get it?) will not affect the programs in any of the others. This is unlike Commodore's offering on the Amiga, which superimposes multitasking on a processor never designed for it. A properly implemented operating system which uses virtual machines will let you run as many applications as memory will allow.

There are several such operating systems: *Windows*, *OS/2*, *DesqView* and *Concurrent DOS* to name but four. *VM/386* aims to do the same thing, but has been designed specifically for the 80386's special mode, which the others haven't. It all sounds like jolly fun, and I should have a copy within a few days, so I'll let you know how it works. You really need 2Mb or more memory to do it justice!

### You fattening dither, you

Scanners are funny things, particularly when used in conjunction with laser printers. Most of them offer dithered grey scales rather than



• 4-bit grey scale



• Fattening dither

true ones, with either 16 or 256 shades of grey. The suppliers of the dithering devices like to have it known that true grey scales don't work on a 300dpi device like a laser. Those whose scanners do offer true grey scales claim dithers are for kiddies.

I recently had an HP ScanJet Plus desktop scanner for a couple of weeks for review. It's an excellent machine and offers 16 and 256 true grey scales, as well as a choice of four dither patterns: the vertical dither, the Beyer dither, the fattening dither and the coarse fattening dither (yes, honestly!). Using HP's high quality photographic test 'target' showed that the 256 grey scale version came out rather fuzzy, though this image would probably be good for a phototypesetter with a higher resolution.

The 16 grey scale image is good, but the fattening dither is little worse. For reproduction in a desktop published newsletter or flyer, either would do. Scanning other photographs showed up the differences between the two techniques and between the different dither patterns. Some photos looked considerably better with one dither than another. Some looked better with a dither than a true grey scale. It pays to experiment if you have a scanner with a selection of dithers available.

Simon Williams



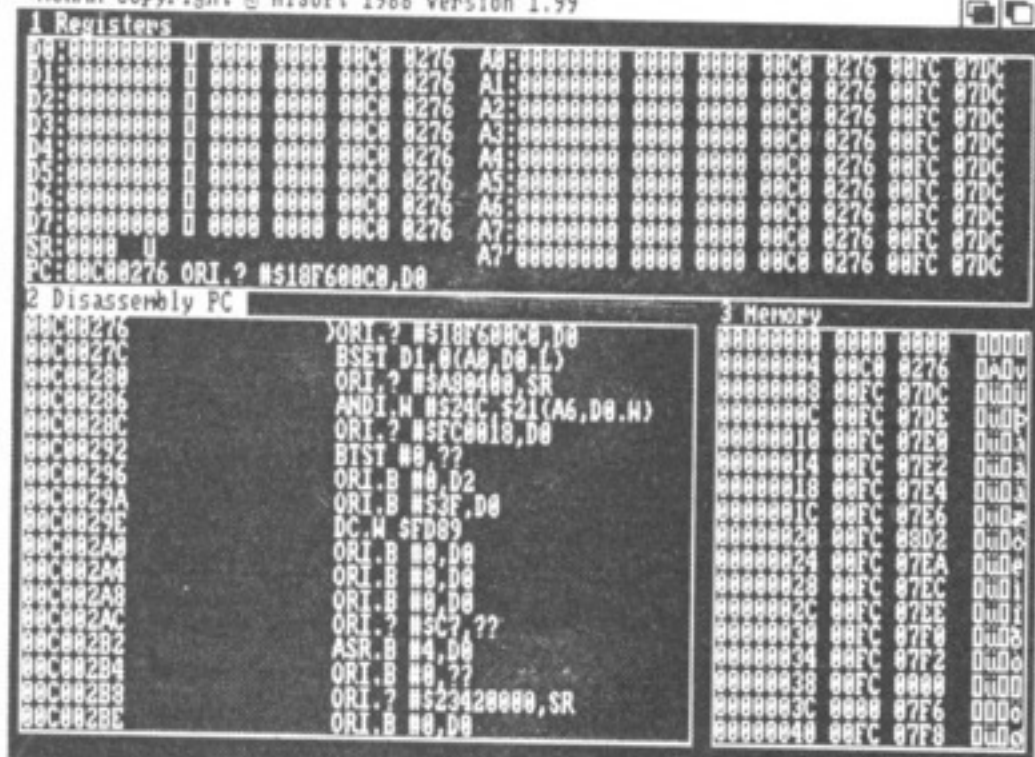
# AMIGA BLIT

## Devpac supremacy under threat

If you asked an Amiga machine code programmer what their favourite Amiga based assembler was, chances are the answer they would give would be HiSoft's Devpac 2.

Ever since the release of the original Devpac assembler, HiSoft's development system has been the pick of the bunch for the vast majority of professional games programmers. Big names such as Steve Bak and Jez San have developed some of the most popular Amiga games such as *Goldrunner* and *StarGlider 2* using Devpac as the sole development tool.

MonAm Copyright © HiSoft 1988 Version 1.99



• Devpac 2: Under threat from Argonaut's new PDS performance system?

Until recently, Devpac's supremacy in the assembler market had been absolute, and with the announcement of an even more powerful professional version coming soon, HiSoft's grip on the market seemed set to continue. The only complaint levelled at Devpac by many professional programmers was that although the system was fast compared to the competition on the Amiga, it was still rather sluggish when compared to the PC-based PDS systems.

For those of you who have not heard of the now infamous PDS system, it basically consists of a PC compatible (usually 286 or even 386 based) that contains a board connecting it directly to the particular machine the programmer is writing for. Cross development software on the PC allows programmers to write, assemble and debug their code on the PC and have the results instantly downloaded to the destination machine. Assembling and downloading code under PDS has to be seen to be believed; it is almost instantaneous!

Unfortunately, PDS systems do not come cheap (If they did, I would have bought one yesterday!). So what can the average home user do? Until recently, you either grew old with Devpac or went without; it was as simple as that! Fortunately, in about three months time an assembler development system is due for release on the Amiga that promises the performance of a PDS system at the same price as Devpac.

Who is responsible for this phenomenal achievement? Non other than Jez San, a former devoted user of Devpac. When I recently phoned Argonaut, Jez gave me a complete run down of the capabilities of Argonaut's latest masterpiece.

On the surface, the *Argonaut Assembler Development System* will look and function in a similar fashion to HiSoft's system, but the Argonaut touch will be more than evident.

Firstly, the text editor will be a far more powerful and considerably faster beast than HiSoft's. The editor will allow multiple files to be open at the same time and text to be cut and pasted between them.

Take a look at the assembler, and things really start to cook! The assembler will actually function at an astonishing 10 times the speed of the Devpac assembler. Of course, that's only on a standard 68000-based Amiga; stick a 020 or even an 030 board in your Amiga and the AADS will actually function faster than a PDS system!

AADS was originally developed as an in-house system for use on Argonaut's fleet of Amiga 2000s, but Jez soon saw the system's potential as a commercial product. Jez hopes that he may even be able to tie the system up with the manufacturers of the PDS system and have PDS market the product as well as their PC-based systems.

Why was AADS developed? Mainly because Jez felt that Devpac no longer filled their particular needs and therefore an alternative had to be found. Expect to see the AADS in about three months time, priced at the astonishing price of just £60 (I've placed my order already!).

## The Key to Consolation

The standard AmigaDOS CLI window is a pretty primitive beast at the best of times. The lack of any form of command line history or editing can be a real pain at times unless you've mounted the new 1.3 console handler or a public domain utility such as the popular *ConMan* console handler. Surprisingly, although the basic console looks pretty inflexible, it does feature several hidden keyboard controls that can make its use almost bearable (well almost!).

You are probably already aware of the key combinations used to break out of batch files and programs (<CTRL> + <C>, <D>, <E> or

## Message Port

If you have any comments on any issues raised within AmigaBLIT, then I'd love to hear from you. Similarly, if you have any tips or tricks that you feel will be of interest to others, then why not send them in. Write to: AMIGABLIT, NEW COMPUTER EXPRESS, 4 QUEEN STREET, BATH BA1 1EJ.

<F>). But did you know that there are a further nine key combinations hidden away in the console handler code? Below is a complete run down of the key combinations available:

- <CTRL> + <G> Causes the screen to flash.
- <CTRL> + <H> Steps back and deletes a single character
- <CTRL? + <J> Same function as the <TAB> key
- <CTRL> + <K> Moves the cursor up one line
- <CTRL> + <L> Clears the console window
- <CTRL> + <M> Same as the <RETURN> key.
- <CTRL> + <N> Turns on the alternative character set
- <CTRL> + <O> Reverts to default character set
- <CTRL> + <X> Erases the contents of the current line

## What ever happened to...

The Amstrad marketing person that, when questioned about the Amiga after its initial launch, said "If the Amiga was £400, I'd buy one tomorrow!" I wonder if he ever did buy that Amiga he had promised himself?

Jason Holborn

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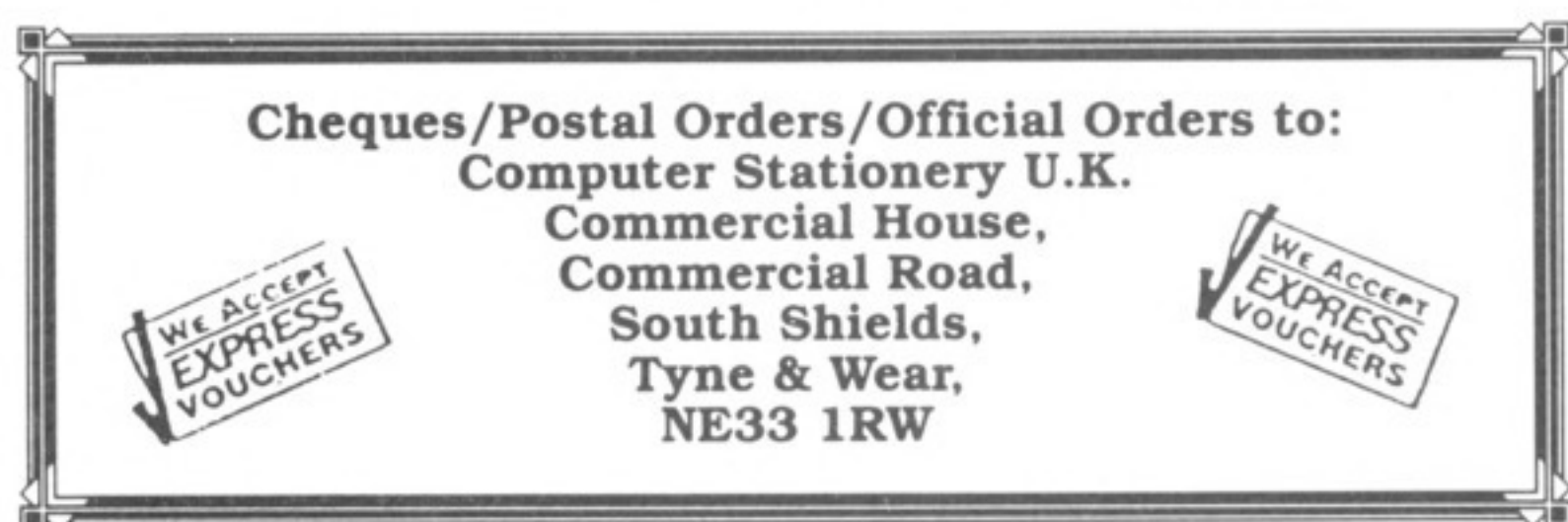
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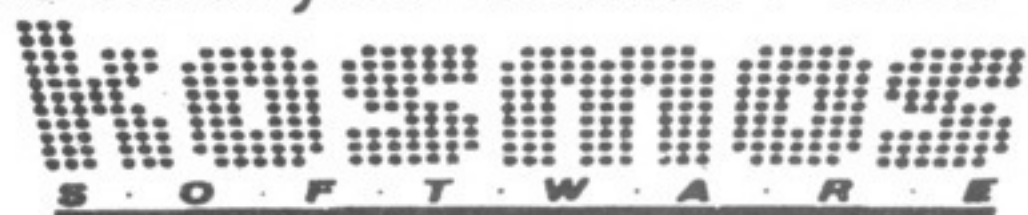
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## YOUR FORMAT

MACHINE-SPECIFIC COLUMNS



### Screen shot

Given the fact that the main principle behind most games is to kill the enemy, be they reds, aliens or Commodore owners, it seems a bit stupid to expend unnecessary energy jiggling your joystick or bashing the keyboard to achieve this aim. It'd be a lot less trouble for all concerned if you could simply point a gun, pull the trigger and send those alien scum back to whence they came.

Up until now, only the sad individuals who own a Nintendo or Sega console have been able to use this method with any regularity. The Speccy's had its light guns in the past, and even a wacky one where you fired real pellets at a flimsy target off-screen.

For various reasons, mainly connected with price and software compatibility they never caught on. Latest news to reach me could change all this. In a joint venture, Amstrad and Mastertronic are preparing to release The Magnum - a light gun specifically for the Spectrum. With any luck this should establish itself as a Spectrum standard for controlling games, just like the Kempston interface did. For starters, the price is right - a meagre £30 - and, secondly, the huge names behind the venture should ensure good software support. A light gun won't do much good promoting the Spectrum as an all-round computer, rather than just a kiddies' game machine, but just think of your Operation Wolf high score - and buy it!

### Alternative gameplay

Good to see some slightly different games being released to break up the almost continuous stream of coin-op conversions. Times of Lore is very un-coin-op-ish, being a role-playing game which combines Gauntlet-style graphics and adventure-style puzzles and combat. If the plot doesn't insist on those ridiculous vowel-less fantasy-sounding names, it could well be worth buying.

Also promising to be a tad different to the norm is Nightbreed, the game based on Clive Barker's latest book Cabal. This is going to be an arcade adventure full of evil creatures from a parallel dimension. It'll probably be marketed as a hide-behind-the-sofa product, but as with every piece of software that's meant to frighten you, it won't do in the least. The things in computing that really give you nightmares are multiloads, wordprocessors that won't print, games that make you start right back at the beginning every time you lose a life, adventures which crash when you enter a swear word, etc etc.

### +2A plusses?

As you may have noticed, the new range of Spectrum peripherals rumoured in one Spectrum-specific mag to be coming from Amstrad itself still haven't appeared. I was ready to follow the half-witty journo theory I formulated in issue 23 until someone pointed out a very interesting fact to me, if you're sitting comfortably...

This very interesting thing appears in the +2A's revised manual. (You should remember this machine was a redesigned +2 with a different coloured chassis and innards closely resembling a +3.) It says that you will be able to buy an "S-1" interface which will allow you to use one or two of Amstrad's 3" drives with the machine. This certainly helps back up the mutterings that a stand-alone drive for +2

owners is set to spurt forth from Amstrad. Unfortunately, no date is given. It just says "When available." It looks like we will just have to wait 'till Express runs the official story. In the meantime, maybe crossing every spare part of your anatomy might help.

### Not particularly strange and probably completely untrue fact no.1 (in a series of 1)

Even before the Amstrad buy-out of Sinclair, Alan Sugar's son used to own a Spectrum in preference to the machines his old man made!

### Unknown territory

The Spectrum's been around for a good few years now, so no doubt most of you think you know everything there is to know about the machine. Sorry to dash your smarminess! Here are a few undocumented features that were omitted from the manuals, and only known by real smartasses. Like me, for example.

### Righting wrongs

Barely two weeks ago this column was the site of some heavy criticism directed at the BBC's Software Show, and the unfair way it ignored the Spectrum.

As if by magic, a kind of peace offering is on its way. Apparently, Horizon is going to devote an upcoming programme to everyone's fave computer guru - the boffin with the mostest - let's hear a big hand for (pregnant pause) Sir Clive Sinclair! (Cue applause) It's great to see every Spectrum owner's pin-up have his life story told to the nation. The Spectrum undoubtedly played a big part in his illustrious career, so I'm looking forward to seeing huge amounts of air time given over to it.

Out of all the major computer industry figures, Sir Clive is without doubt the best. He's got the highest IQ, isn't overly mercenary and doesn't sport a ridiculous beard. Not only that, he's also pretty special with the ladies. That Bernadette Tyan he recently married - "Wotta Stunna!!" was the Sunday Sport's verdict. Who would argue with that?



• Our hero

On the original Sir Clive 128 machine there are a lot of little-known and fairly useful editing features:

- To undelete a deleted line - Extend mode and N
- To delete a word in front of the cursor - Extend mode and W
- To move the cursor ten lines up the page - enter Extended mode and press P
- To move it down ten lines - press Symbol Shift and I
- To move cursor to the start of current line - press Extend mode, Symbol Shift 2/GR Y
- To move the cursor to the end of the current line - press Extended mode M/GR X

And that's not all - there are more secrets to be uncovered inside the sleek black exterior of the +3.

To access a test mode, do the following: Holding the BREAK key, reset the computer. Some colour test bars appear. Press keys QAZPLM down at the same time to enter a comprehensive test mode which lets you check lots of things, including printers and joysticks. Not a lot of people know that, he says predictably.

Robin Alway



## News

Did you know (I bet you did) that Bruno Brooks, the top Radio One DJ, uses a Commodore 64 to control his curtains and doors, along with an Amiga to control his record collection (well I never)? If you didn't know that, then remember where you read it first.

## New Releases

### Silk Worm • Sales Curve • £9.99

This is a right to left scrolling parallax blast-'em-up, where you control either your helicopter or your armed jeep across a deadly battle area covered with all kinds of nasties trying to bump you off. This is a brilliant conversion on the 64 of a very cool and addictive arcade game. Well worth a look.

## Veni video vici

- I saw it, I played it, I videoed it.

Now here's a useful item for anyone who is going a rather subtle hue of green looking at those Amiga owners adding titles to their video tapes.

It may be of some interest to you to know that by plugging the Commodore's TV lead into the video and then plugging the video lead into the television, you can record graphics and animations.

For instance, while visiting a friend we hooked up his C64 to a video recorder and produced a rather snazzy action-replay of a game of Gauntlet.

This technique can be used to produce demos such as the Bulletin 1000 that can be seen in larger branches of Boots and John Menzies.

## Tips

Gary Gould is back at the hacking scene, with a hot poke for *To Hell And Back*:

Load the game, reset your micro and enter:

**POKE 32371,173** for lots of lives

**SYS 30464** to start the game

Meanwhile, gamers having trouble with *Ghostbusters* need worry no more. When asked if you have an account, answer "yes" and tap RETURN instead of entering your name. Entering 458 as your account number will result in so much money it won't fit on the screen!

Want to get to Level Two on *Vindicator*? The password is ENOLAGAY - no doubt the programmers are fans of OMD!

## Bang!

Only recently my Commodore 64 decided to stop working. Something was wrong with the power supply, and although the light was one the screen remained black.

Upon taking my injured beast to a specialist, I was informed that this is a fairly common problem among 64s and that I was



• Is your Commodore 64 about to blow up?

lucky that it hadn't exploded on me!

Not being able to place the blame on little computer people, the specialist promptly relieved me of the sum of £25 for a new power pack.

Naturally, my Commodore resumed business as usual, but I still find it hard to believe that nationwide people are ducking bits of silicon as their pride and joy explodes all over the place.

If anyone has come across this we'd be interested to hear from you!

Ian + Mick + Nick

## DIY Timer

This week's listing is nothing special, as it came off the tops of our heads - so if you have a routine which isn't too large and you'd like it printed in this column, then write to Sector 64, New Computer Express, 4 Queen Street, Bath BA1 1EJ.

This type-in is a timer, so that while you're programming you can see just how long you've been typing away (very useful indeed).

The last four lines allow you to enter your own numbers so that you can start the timer at any point. So, for instance, if you wanted to start at 19:29 you would just 01 in the first line then 09 in the second and so on.

It's not that big so why not have a go.

```
0 FORL=0TO145:READA:POKE49152+L.A:NEXTL:A=48
10 DATA 120,169,13,141,20,3,169,192,141,21,3,88,96,162,0,189,133,192
20 DATA 157,31,4,232,224,9,208,245,162,0,169,1,157,31,216,232,224,9,208
30 DATA 246,169,22,238,39,192,173,39,192,201,51,208,65,169,0,141,39
40 DATA 192,238,141,192,173,141,192,201,58,208,50,169,48,141,141,192,238
50 DATA 140,192,173,140,192,201,54,208
60 DATA 35,169,48,141,140,192,238,138,192,173,138,192,201,58,208,20,169
70 DATA 48,141,138,192,238,137,192,173
80 DATA 137,192,201,54,208,5,169,48,141,137,192,169,1,141,25,208,169
98 DATA 127,141,13,220,169,129,141,26,208,76,49,234,58,18,5,13,48,48,58
99 DATA 48,48,0,0,0,0
100 POKE49293,A+0:REM
101 POKE49292,A+0:REM THIS SETS TIMER
102 POKE49290,A+0:REM TO 00:00
103 POKE49289,A+0:REM
104 SYS49152
```

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## Badly developed characters

The PCW printer is sneered at by many but is a remarkable piece of budget equipment. You just plug it into the PCW and away you go: whatever is on screen comes out on printer. (Ask another computer owner to put a £ sign on screen and get it printed out as a £ and not a #. This is even beyond British Rail at Bath whose on-platform monitors display a day trip to Weymouth as costing #3.10).

However, if it goes wrong you have the problem of fixing it, as Amstrad won't help you find a replacement. Isenstein (0244 312986) will fix yours for you if it goes wrong, giving a min to max price range of £18-£80 (8256/8512) and £25-£115 (9512).

The most common problem with the 8256/8512 dot matrix is that the pins get worn and stop firing properly. First symptoms seem to be that the tops and bottoms of letters come out faint - i.e. tops of capitals, ls, hs and so on, and bottoms of gs, y, and js.

The easiest solution (although I suspect it's only delaying the inevitable) is to lift the black panel with the 'Amstrad' logo on it straight off. On the right hand side there's a blue or red plastic knob and ratchet. The arrow points the current setting of the distance of the print head from the paper; if you move the head closer the faintness will virtually disappear. Move the knob to the closest setting (towards

## Update

Mini Office 2 (complete with Spell Checker and Thesaurus) and Micro Design (new desktop publishing package rumoured to be best yet) are still a couple of weeks away. The classic reason why software isn't out yet is that it's "two weeks away, awaiting documentation". It is amazing how this can take six months yet the manual is still lousy at the end. Still, it only took God six days to create the universe and look how many hundreds of years it took to produce the manual for that.

you) and replace the cover; your print quality should be much better.

How many years can you expect to get out of your PCW? Well, my printer has undergone three years of constant hammer and, though a bit raggy round the edges, is still working fine. I reckon four to five years of useful service is about right.

## dBasement bargain

dBase, despite recent supply problems, is still available for the PCW from Language Services (0843 69847) for £99. Apparently dBase is currently being worked into a special PCW version by Ashton-Tate, so watch this space.

## Mae Basil yn twp

M Smith of Powys chastises me for advocating that you make line 1000 of your BASIC programs SAVE "PROG.BAS" or whatever, to make saving of your current listing automatic. Make it line 1, he says, and it's saved before it's run, insuring you against dump outs halfway through.

Basil Pigg



## QL macro assembler

Sinclair commissioned quite a lot of software for the QL which is now being sold off quite cheaply by one or two suppliers.

If you are interested in programming the QL in assembly language, I can recommend the QL Macro Assembler. This was produced by GST (which wrote the word processor that used to be bundled with the Atari ST), and is in my opinion the best assembler for the QL. This assembler has extremely powerful macro facilities (you could use them to write your own cross-assembler for a different processor) and is supplied with the Metamco text editor, and the standard QL Linker, also written by GST.

QL Macro Assembler costs £19.95 and is available from EEC Ltd, 18-21 Misbourne House, Chiltern Hill, Chalfont St Peter, Bucks SL9 9UE.

## Anyone for Fractals?

QL users, and anyone else, interested in fractals, the Mandelbrot set and similar ways of using vast amounts of computer time to generate pretty pictures, ought to subscribe to Fractal Report. John de Rivas, the editor, has a QL, and at least one of the articles in the inaugural issue was written by a QL user, so there should be plenty of QL-related articles in subsequent issues. The subscription is £10 for

six issues, from Reeves Telecommunications Laboratories Ltd, West Towan House, Porthtowan, Cornwall TR4 8AX.

## SuperBASIC tip

If you are new to the QL and are writing programs in SuperBASIC, you can make your programs much easier to follow if you use a single colon on a line to separate sub-programs (procedures and functions) from one another.

## QL Teletext adaptor

Micro Projects Ltd, which manufactures a Teletext adaptor with an RS232 interface, is thinking of developing a QL software package so that QL users can get the most out of it. If you are interested, give the company a ring on 0270 875178.

John Torofex

## Networking

If you have tried to network two or more QLs together, you probably found that you couldn't get it to work properly due to bugs in the original software.

Tony Tebby's SuperToolkit II, available for £23 from Care Electronics, lets you network up to 64 (!) QLs together, reliably. You also get lots of other goodies into the bargain - full-screen editor, job control, key define etc.

Care is at 800 St Albans Road, Garston, Watford WD2 6NL.

By the way, if you want a cheap print buffer, buy a second QL, network it to your existing machine (you need the toolkit), and use it to drive the printer.

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### CD goings on

Optical technology in the form of the CD ROM player looks set to dominate the latter part of this century. Massive storage capacity for data, images and sound will be the norm, along with the ability to make use of all that power.

The first optical application, however, was not a CD player, but the interactive videodisc. Pioneered by Acorn with the Domesday project, IV uses a BBC Master 128 to control and interact with the system. Most often used in the classroom, or in business, because of the expense, a IV system is still a revelation to use.

The latest disc, called *Opensoft*, is designed to help anybody create a presentation in next to no time. *Opensoft* uses a combination of still frames and video sequences, together with windowed images and captions to create a menu driven system. It is claimed to be "The simplest and most powerful presentation system available".

### Acorn grows

Acorn's financial results are covered elsewhere, but I would just like to examine a couple of points in more detail. First, no dividend is being given on the net profit of 1.1 million. This means no money for the shareholders, and although a sensible measure, will not endear Acorn to the stock

markets. Second, its overdraft has gone, replaced by cash reserves of 2.5m pounds. No longer beholden to the bank, Acorn should have plenty of money to spend on vital things such as R&D, or marketing. New machines are on the way, but some of the credit must go to the still buoyant market for the Master 128.

Andrew Brown

## Jargonistical pseudospeak

*Al Haig (bless his little cotton socks) was a master of them. Senior British civil servants are economical with them, and computer journalists throw them around like confetti. What am I talking about? Jargon, buzzwords, and euphemisms; the industry is full of them. For example what is the difference between an IEEE 488 and an HP-IB? Answer, nothing at all. So I have decided to take an occasional look at some of these words, and see if I can demystify them. First, I would like to decode the near universal term ROM, standing for Read Only Memory. In BEEB terms however a ROM is very often an EPROM. An EPROM can be erased by ultraviolet light, and once erased can be reprogrammed, or 'burned' in. ROMs come in a large variety of sizes from 8k to 128k, and beyond. For example, all the software in the Master 128 resides in one chip, which then pretends to be four 16k ROMs. EEPROMs such as in the Master Compact, are the same as EPROMs except their contents can be altered using the electricity inside the computer alone.*

# MSX

### Link show

Although things are still in the early planning stages yet, MSX Link is planning an MSX show some time in October. The venue will possibly be somewhere in central Peterborough, thus making it easy to get to by train. More details when the venue and dates have been finalised.

### Alternative attractions

So many items of news have come in this week regarding all aspects of MSX computing that I'll have to hold over some of the news until next week.

First item this week is the report from the Alternative Micro Show, which took place on the first of April at the Horticultural Hall in London. The MSX was to the fore, with no less than four MSX user groups being represented.

David Krawczyk of MSX Central was once again demonstrating the Philips 8280 Video Dedicated Computer, creating a large amount of interest in this machine. Even TV companies have shown an interest in this computer. Jeff Whiting of MSX Tech had a large stand, as did Vernon Wyland who runs the MSX Viewdata comms system. MSX Link did not have a large stand at the show, due to other commitments, but a representative was showing the flag and recruiting for them.

The show seemed to be quite a hit with MSX users, with sales of both software and hardware doing well. MSX Central sold a second-hand Toshiba disk drive for £199.00, and could have sold many more, even at this price, such is the demand. All in all, a successful showing. I can't wait for this show to become a two-day event.

### Strong stuff

Gremlin has just released *Hercules, Slayer of the Damned* - a beat-'em-up much like *Way of the Tiger* in presentation, each section of the game requiring a separate load. Initial impressions are favourable, with reasonable graphics and good response. My full review will have to wait until I've fulfilled 'The First Labour'.

Gremlin's PR department has informed me that the company has no solid plans regarding releases for the MSX format, although it may release a couple of titles this year. Maybe it's spending all its time writing mega games like *Federation of Free Traders*.

Keith Neal

## Operation Bug

Regular readers will have read my enthusiastic review of *Operation Wolf*. It seems, though, that there is a problem with this game regarding its compatibility with all MSXs. David Krawczyk, of MSX Central, points out that this game fails to run on the Toshiba HX/10.

Unfortunate, considering that this is the most popular MSX in the UK. The problem did not become apparent to me, of course, as I use a JVC HC7 to test software.

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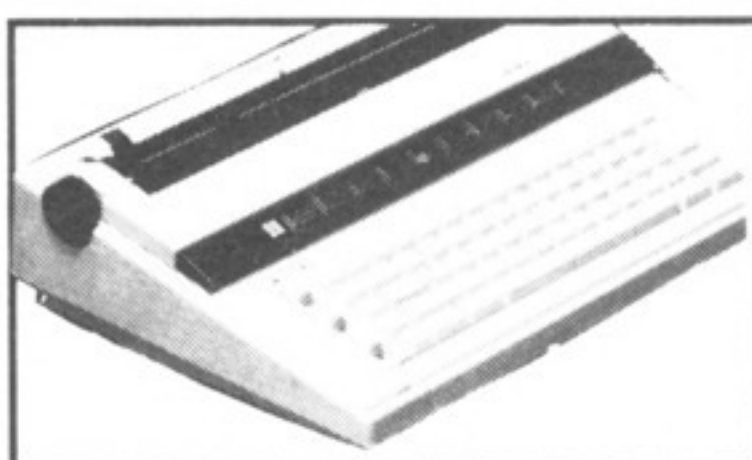
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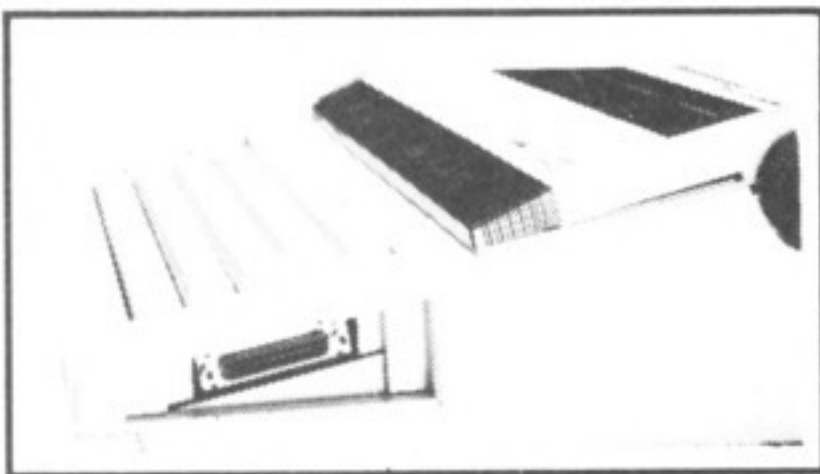
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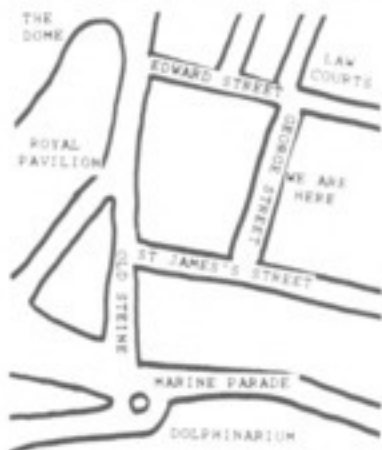
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# CPC

### Club call

David Gosling has asked me to mention the  
*Solent Amstrad Club*, which has been going  
for over three years now.

Meetings are held at 8pm on the fourth  
Sunday of every month at the *Trojans Club*,  
off **Stoneham Lane, Eastleigh, Hampshire**.  
Just turn up and you'll be greeted with open  
arms - or you could always give David a ring  
on (0703) 462436.

### 3D-Fraktale auf dem CPC

There's a 3D fractal generator not long  
released in Germany. (Don't ask how I find  
these things out, just put it down to my  
extensive contacts throughout the computer  
industry. Ahem.)

It's not cheap - 59 Deutschmarks on  
cassette and 69DM on disk - but the results  
I've seen are pretty impressive. More info  
from **DMV-Verlag, Postfach 250, D-3440  
Eschwege**, or telephone (0 56 51) 80 09-0.

### Personal organiser, organiser

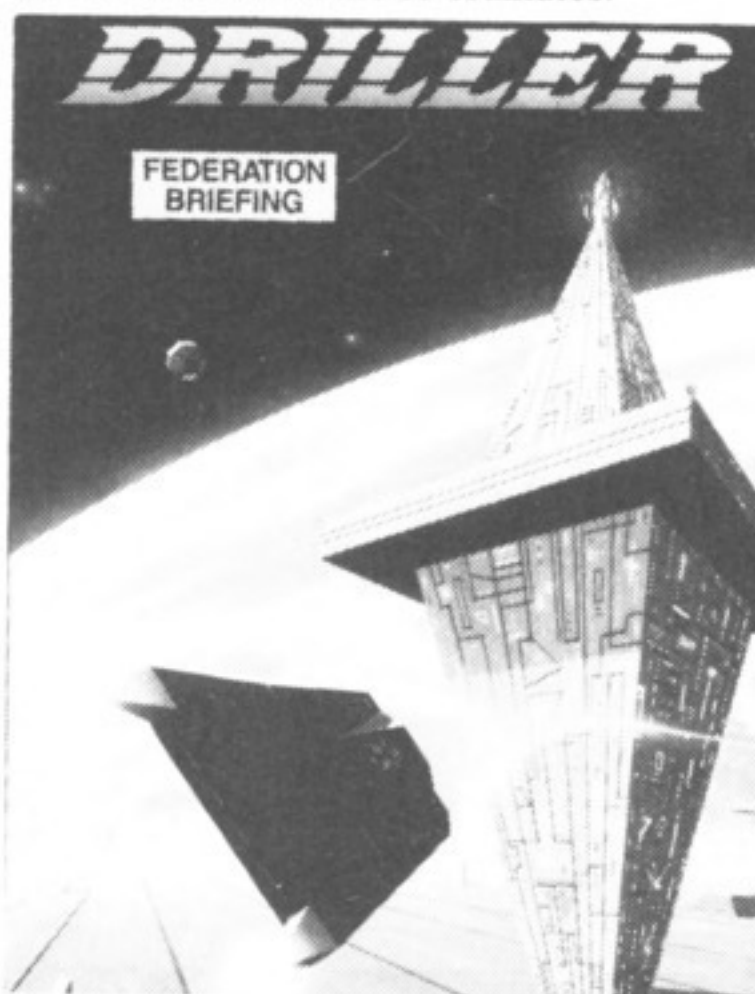
Steve Denson tells me he has a new  
compilation available. SD Microsystems has  
been for some time one of the principal  
producers of the kind of small business  
software which is so plentiful on PCs but  
fairly rare on CPC. *The Home Executive*  
(rotten title, that) is really a collection of  
household or personal management modules,  
linked by a master menu system.

"A special feature," says Steve, "is that the  
programs print information on organiser  
stationery as well as standard A4 or computer  
listing sheets." Aimed, I'd guess, at the  
serious home user it should also appeal to  
small organisations such as clubs or  
businesses. It includes an accounts ledger, a  
card filer, shopping selector (a what?), mini-  
calculator and various desktop utilities.

The *Home Executive* is £9.95 including p&p  
from SD Microsystems, PO box 24, Hitchin,  
Herts, UK.

### Driller thriller

One of the best games ever released, was  
Incentive's *Driller*. But I never succeeded in  
tapping more than about a third or a quarter  
of the sectors. Until, that is, I used this  
reference list of all the co-ordinates.



• Driller - now you can finish it!

Sector	X	Y
Alabaster	4496	4096
Amethyst	6400	6050
Aquamarine	5120	2896

Basalt	0930	2240
Beryl	7104	3512
Diamond	4096	3472
Emerald	3746	4096
Graphite	1680	6336
Lapis Lazuli	4096	3746
Malachite	5952	5026
Niccolite	0512	1698
Obsidian	6656	6306
Ochre	1808	6720
Opal	7394	7744
Quartz	2768	1792
Ruby	3746	2550
Topaz	3077	1310
Trachyte	4496	6912

(If like me you're a Freescape/Incentive fan  
you may appreciate the *Incentive Collection* in  
next month's *Amstrad Action*, which has five  
pages packed with maps, cheats, pokes and  
playing hints for *Driller*, *Dark Side* and *Total  
Eclipse*.)

Incidentally, there's apparently a new  
release in the Freescape series coming. I'm  
under strict orders not to say any more, but as  
soon as I'm given the all clear I'll fill you in  
(groan).

### Go for broke

Brian Barton of Goldmark Systems has been  
telling me about a new product he has coming  
out that is bound to stir up some controversy.  
"It's the very first utility to transfer Go!  
loaders to disk," he says. "Previously they  
said it couldn't be done, but we've just

## Gauntlet

*Did you know you don't have to die in  
Gauntlet? It's quite simple to avoid it, as  
well. Start playing with one player and when  
he is nearing death press the magic button  
to create a second player. When the first  
player dies you can carry on with the  
second until he is close to death, at which  
point you simply reactivate the first player.  
Then you carry on alternating between  
characters, and consequently between  
joystick and keyboard control, for as long  
as you like.*

*The same cheat even works in two-player  
mode. Watch out, though, that you don't  
both get killed simultaneously or the game  
ends.*

developed a fully automatic program to do  
just that."

The utility saves massively on memory, too.  
Unfortunately it only works on the 6128.  
Goldtrans costs £15 from Goldmark (07072  
71529).

The controversy comes about, as always  
with these devices, because of accusations  
that it aids piracy. No doubt US Gold will be  
displeased that a utility is now on sale that  
enables owners of *Heroes of the Lance*, for  
example, to save to disk. Barton says that he  
is completely opposed to piracy, and points  
out that when he copies tapes to disk he  
insists on keeping the tapes sent in. "I throw  
them out," he says: "and make sure the  
dustbinmen take them. They think I'm crazy,  
and perhaps I am - but that's the way it is."

He points out that the price differential  
between tape and disk versions of a game is  
very often £5 - far more than the difference in  
price between the two media, even for the  
end user. "In fact the cheapo disks used can  
be picked up in bulk for about £1 each," he  
says: "so why on earth should the poor old  
games player pay over the odds just because  
he doesn't want to spend the rest of his life  
waiting for tape to load?"

While it's difficult to take exception to that  
part of Barton's argument it will be  
interesting to see how US Gold and others  
react. Any thoughts?

Steve Carey





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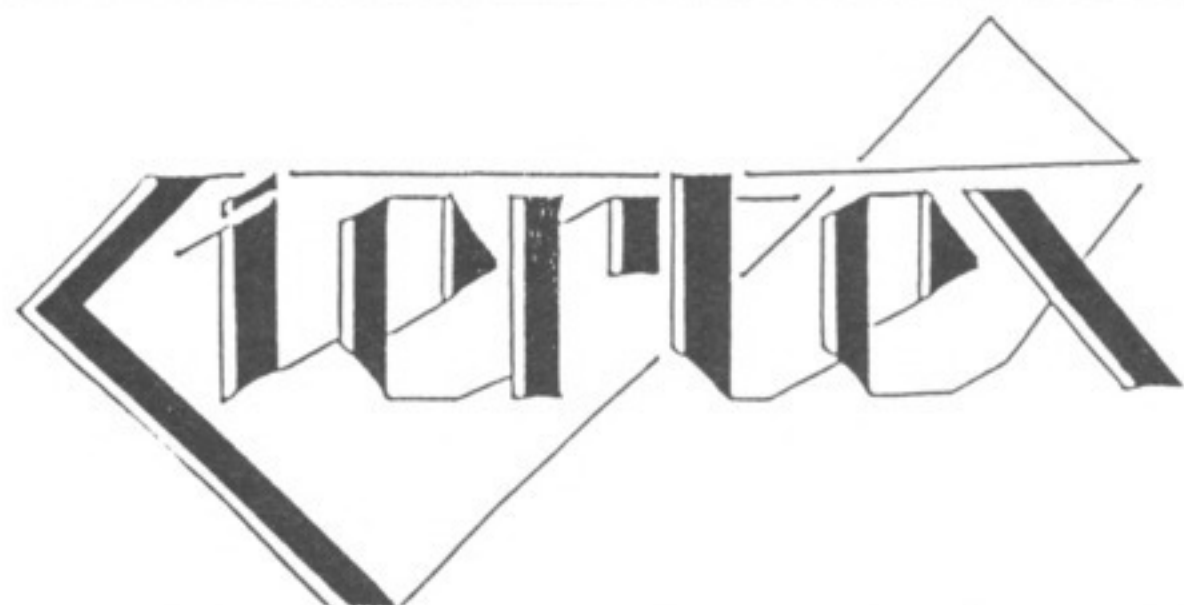
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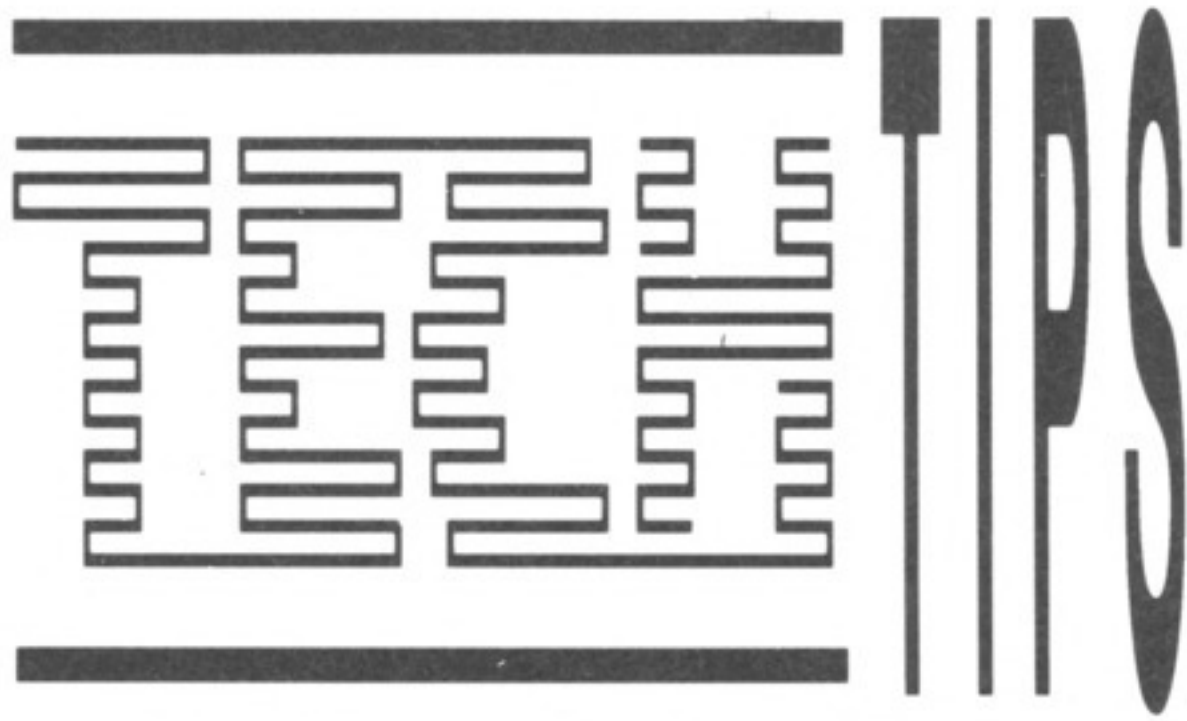
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*If you think your work measures up to our past projects like Thunder Blade, Last Duel and 720°, please send examples of your work together with a C.V. to the above address.*

*Alternatively, phone Andrew Ingram on 061 446 2251 to discuss these opportunities further, all applications will be dealt with in the strictest confidence*





## HELP! Security file

I have a problem with a piece of software for my recently purchased Commodore 64. I am a security manager for a large textile firm. I have used a file system to relate vehicles to staff, enabling me to identify staff details in relation to their motor vehicles.

The file system I use is a simple one incorporated in an educational package called "Go Micro".

## HELP! Noisy parker

I have just upgraded to a 1040STF from a 520STM and I think I may have a small problem with the disk drive.



● Is your ST making funny noises?

It's very noisy in operation in comparison to my external 1Mb and my old SF354 half meg drives.

I know drives vary in operational specifications, but should it make any noise? It is very loud!

Apart from the noise, it appears to work fine.

C Parker, Pill, Bristol

• As long as the drive is working correctly, don't worry about it. As you said in your letter, Atari has used drives from several sources and they vary in operation.

If you have any problems, take the machine back to the retailer for exchange or repair.

## HELP! Trouble communicating

I have recently purchased a second hand modem made by D A COM Sytems DSL 2123AD.

My problem is I have no information of any kind and as the modem is entirely software controlled I can not afford to experiment. If possible, could you or any reader supply the address or telephone number of the manufacturer, or any useful information which may help.

My 'phone number for any warm-hearted, kind, computer idiot who may be able to help is 091 5485586.

I'm using BBC computer Comstar II software.

E. Davis (no address supplied)

• I'm afraid I've been unable to locate the address of the manufacturer, but if any of our readers can help this guy, please write to me – or telephone him – with the information.

## HELP!

### Security file

I have a problem with a piece of software for my recently purchased Commodore 64. I am a security manager for a large textile firm. I have used a file system to relate vehicles to staff, enabling me to identify staff details in relation to their motor vehicles.

The file system I use is a simple one incorporated in an educational package called "Go Micro".

• Well Mike, either your explanation of the file program is a little askew or you're labouring under a misapprehension. If you're typing data into a filing program then merely loading back the program into the computer, it does not load back the data.

There should be an option within the filing program to write your data file to tape and read a data file back from tape.

You appear to be loading up your database program, tapping in the data, saving the program, then expecting to load back the data with the program – databases do not work in this way.

Save your DATA file, then quit the program. When you come to use the database again, load up the program, load the data file – et voila!

## HELP! C64 machine code

I have been struggling with machine code on the C64 but I cannot seem to understand it.

I have been looking for a good book to explain it step by step and have been recommended one in the Dr. Watson series.

Unfortunately, I cannot get hold of it therefore I would be grateful if you could recommend one.

Colin Fulton, Ayr, Scotland

• Give Sybex a call on 0279 26721. It publishes a range of programming books and at least one 6502 machine code tutor.

## TIP What's up Doc?

Re. the letter from Doc. Coshe (Express 'ish 22) concerning the failure of his print head cable.

I don't know the KXP-1081, but assume that the system is similar to that used in many printers i.e. a flexible strip with etched or printed tracks.

Having examined an Epson MX-80 print head, I discovered that the cable is soldered to the print head, so obviously the cable can withstand the heat of soldering.

If only a couple of tracks are damaged, it should be possible to correct the problem with a couple of blobs of solder, or short pieces of wire. The latter would probably work for even a completely snapped cable, especially if reinforced

with adhesive tape.

Alternatively, it may be possible to scratch off any protective layers and repair the defective track with conductive paint, which is available from many electronics shops.

Either way, it's certainly a lot cheaper than a new print head or printer and if the printer doesn't work now, then the problem can't get any worse.

S M Walker, Flixton, Gt. Manchester

## HELP! Needs a New Brain

I am writing to ask you if you could help me on a few points.

1. If you know of a good introductory book to computer architecture.

2. A good Pascal book and program for the Spectrum +.

3. If you know of anywhere I can get a cheap but powerful Sord M5 or NewBrain supercomputer (Excuse me, I'm due back on the planet Earth – Tech Ed) and software of course.

Thank you for your help and advice.

**Pascal80**  
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**HISOFT**  
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Microcomputer  
Software

● HiSoft do an excellent implementation of Pascal

A Thompson, Rawcliffe, York

• 1. One of the best introductory texts to computer architecture is *Structured Computer Organisation* by Andrew Tanenbaum and published by Prentice Hall.

2. HiSoft supplies some of the best compilers around. You can contact it on 0525 718181. For a jolly good text book detailing Pascal buy *Introduction to Pascal and Structured Design* by Nell Dale and David Orshalick, published by D. C. Heath.

3. Hey, you're putting me on, right? The Sord and the NewBrain? No, but I do have a book on train spotting that I could let you have...

## HELP! Not big enough

When recently purchasing a Sinclair PC200, I was assured that it could be easily expanded to 640K on the main board.

Enquiring about this, different dealers give me different stories.

None of them really seem to know anything about it. Amstrad, after refusing to tell me, says that the expansion for PPC 512 will do the trick. However, the same man told me the RAM chips had 27 pins. I can't honestly say I've seen these before – perhaps they're triangular!

How can I do this upgrade and who will sell me the chips or do the job

## BUG OF THE WEEK

This may not be a new one, but on *Elite* (ST version 1.01) if the retro rockets are fired immediately after leaving the space station, your ship is hurled back straight through the space station, without even a scratch.

R M Johnson, Tamworth, Staffs

*Sisyphus schaefferi* • The single central European species of *sisyphus* may be recognised by its thin coating of dung. It makes balls principally out of sheep excrement, which it rolls away and secretes in the outlet nozzles of interplanetary spacegoing vessels





for me? Is there a technical reference guide available with circuit diagrams etc.?

Nigel Wilcox, Coventry

• Uncle Techtip isn't doing very well this week I'm afraid, kids. None of the suppliers I've called market a RAM upgrade for the Sinclair PC2000 range.

We tried calling the Amstrad technical help line and was rewarded with 14 minutes of continuous ringing then a

Umair Malik, London

• First of all Umair, may I remind you that the licensing agreement for the software you wish to use will probably be for one user only – it will almost certainly not include a clause allowing you to make copies of the software for use at home.

Wow! I sounded almost serious that time. OK. The emulator you need is PC-Ditto available from Power Computing for around £65.

Norm Tierney, London

• Problems 1 and 2 are probably due to too much contrast over the picture display. I would suggest that you determine which of the resistors in the plug controls luminosity and change it for one of (slightly) increased resistance.

I'm afraid that without further information on the Philips monitor (...this is not an open invitation to write again Norm) I can't help with problem 3 – although if you have the computer correctly connected to the monitor the facility should work automatically (that's the point!).

## HELP!

### Dump question

I own a Commodore A500 with which I am having problems programming, and hopefully you can advise on the solution. The problem is that I want to get a copy of what is on the screen and dump it to the printer (120D). Whereas on the Spectrum you could obtain the desired results with an LPRINT:COPY, the Amiga does appear to be somewhat more complex. The reason that I ask is that I would like to be able when programming to get a copy of the output shown on the monitor.

If you are able to help, I would be most grateful.

R L Holton, Swanscombe, Kent

• Why re-invent the wheel? Rummage through any of the lists provided by suppliers of PD software. They will contain lots of utilities to allow you to do screen dumps.

## HELP!

### Psion comms link

I have recently bought an Amiga and one of the things I would like to do is to connect it to my Psion organiser XP via the comms link.

I have checked and connecting the comms link to the serial port of the Amiga is not a problem, however, the software supplied is on PC disk.

With this in mind can you suggest a way in which I might achieve my aim?

Andrew Ward, North Walsham, Norfolk

• Try one of the many comms programs available for the Amiga from the public domain, which should allow your Amiga to transfer data between the two machines. Select a suitable baud rate, set one machine to transmit and the other to receive and it should work. Failing that, call Psion on 01 723 9408, who may be able to help – if you ask nicely.

# Win a sub!

We want to hear your problems, but we also want helpful hints and tips. And reports of those bugs you've found, from the comical to the downright frustrating. You could scoop the weekly best-tip prize of a brilliant piece of software for your machine, or even a free 26-issue subscription!

And remember, there's no waiting around for monthly publication dates. The best tips, and solutions to your problems will be in print before you can say Alan Sugar. (Please don't send SAEs for replies, we can only answer enquiries in print).

So whether it's help offered or needed, write to: Tech Tips, New Computer Express, 4 Queen Street, Bath, Avon BA1 1EJ.

## TIP

### Drive switch

I had a telephone call from Stuart Burns, who gave me the address of a company which markets an ST drive switch.

Apparently, the device allows connection of up to three drives and you can switch between any of them. The company is Club 68000 LTD, Suite 1, Wickham House, 2 Upper Teddington Road, Kingston, Surrey KT1 4DD. Tel 01 977 9596 and the device costs £49.95 – expensive!

## TIP

### PCW downgrade

I read with growing amazement that no Amstrad PCW owners have been informed on how to convert their machines into ones as good as PCs.

It takes very little time – and no hard earned cash – to scratch off the 'W'. This opens up a whole new software market for them...

Derek Freeman, Woodmancote, Emsworth



### Memory expansion for the PC200? Don't ask Amstrad!

'dead-line' tone. Presumably, Amstrad has no-one with the necessary technical ability to answer its help line.

If any devotee of techtips can help then call your favourite Uncle and I'll pass on the information.

## HELP!

### Ditto disks

I have recently bought an Atari 1040ST and I wish to use my Poly's 5.25" IBM software i.e. Turbo Pascal.

As I understand it I would need a 5.25" external disk drive and an emulator. Could you please advise me on the reasonable if not the best choice.

It helps if you have a 5.25" drive, although a lot of PC software is now being made available on the 3.5" standard. If you do want to buy a drive, then contact Cumana on 0483 503121, they supply 5.25" drives to connect to your ST making it fully compatible with all PC software.

## HELP!

### Is this NORMAL?

Yes, it's me again! This time I need help (You said it – Tech Ed).

I've got a Philips E1201 colour TV/monitor and have connected to my ST it via the euroconnector on the back of the monitor. Using this I have three problems.

1. The picture is slightly distorted at the left and right edges.
2. The desktop is very bright – so is everything else.
3. My TV has a facility to detect a computer and automatically go into monitor mode. How do I wire up the ST to this?

## TIP OF THE WEEK

### An astonishing SPECTacle

Recently, you published a letter bemoaning the poor sound quality of my Spectrum +3. Rather than rummage about in the machine's innards, I discovered that the distortion is only present via the TV lead.

To overcome this, I now take the output from the load/save socket by connecting the save plug of my +3 to an external amplifier (I use an electric guitar practice amp).

This restores perfect sound and gives me the added bonus of allowing the use of conventional headphones.

I realise that this may have been stating the obvious, but I'm willing to bet that many Spectrum owners have not tried this (knowing Spectrum owners, I'm willing to bet it too – Tech Ed) and hence are missing out on the full sound potential of the machine.

Grant Punchard, Aldershot, Hants



• Psion to Amiga: is it possible?



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# EXPRESS Classifieds

**WATFORD AMIGA user group** meet third Wednesday of the month St Thomas Church Hall, Langley Road, Watford. Details phone 0923 50161

**DESIGNER MODEM** with lead only £85, Rubyview Communications software (Amiga) only £65, both under three months old, Shamzad 4pm - 9pm 01-570-3564

**PROFESSIONAL ADVENTURE writer** for any Spectrum £12, also Rotronics Wafadrive £20 for 48K Spectrum Tel 091-523-6386 Ask for Nick

**ST FINAL word** £60, Staccouts £60, UMS £10, Outrun £8, Tricks Tips book £8, Gem ST £8 Essex (0268) 417775

**ATARI 520ST:** Under guarantee: over £1,000 of boxed software, worth £1,500: sell for £475 ono: phone Warren 01 393 3722 (24hr)

**CBM 1541 disk drive** £85. CBM MPS 803 printer £65. Both excellent condition. Phone 051 632 2785 (Wirral)

**SINCLAIR SPECTRUM +3 owners.** Tasword +3 word processor brand new, unused. Cost £19.90, will accept £16.50 0226 752022

**FOR SALE: Amiga software** - Falcon, TV Sports Football, Balance of Power, etc. All originals £15 each. 01-675-6419 (Iain) evenings

**NEW FANZINE**, 'Micro Monthly' out now, 75p. Send your money (and SAE) to 7 Acorn Close, Sandiway, Northwich, Cheshire, CW8 2NX

**C64 GUNSHIP**, Mini Office 2, disk notcher, disk box, utilities, blank disks, magazines £20? Will haggle/swap for ST software (01) 485 0458

**WANTED PRO12** must be cheap. (1040 bundled version will do) cash paid please phone 0268 778732

**SPECTRUM UTILITIES**, programming, graphics, useful homegrown software on disciple/+D, opus, microdrive, cassette. £2 your first 'outlet!'. R Cavers, 605 Loughborough Road, Leicester

**DR T's KC51.6** for the Amiga £185. Excellent sequencer! Yamaha DX21 M101 synth £250 contact Clyde 01-691-8227

**SHARP MZ700 plotter**, spare pens, paper, plotter - software £50 also cheap original software and books. Tel: 0532 498985

**WANTED: COMPUTERS.** Willing to pay up to £20 write to: Robert Frosdick, 1 Northolme Close, Grays, Essex, RM16 2NX with details.

**ACORN ELECTRON**, plus 1, plus 3, 3.5" disk drive, data recorder, view, viewsheet etc. Tapes and disks £120 Tel: (03526) 3696 evenings.

**FOR SALE Atari XL** disk drive, datacorder, joystick, games. Offers over £25 considered for quick sale 01 878 1783 (eves)

**CAN'T COMPLETE** a game? Write now to: - Game Busters, 9 Emerald Close, Waterloooville, Hants. PO7 8NZ Please enclose a SAE for details. It's cheap and the best.

**FOOTBALL EXTRAVAGANZA**, Atari ST originals, Football Director II, Tracksuit Manager, International Soccer, £20 the lot. Phone Rotherham 370149 after 6pm

**C128 SOFTWARE:** Basic 8, Beginner's Guide, Tricks and Tips £45. C128 helper £16. Prog. Ref. guide £16. Turbo - ROM £15 (0637) 876728

**WANTED - COPY of manual** for 48K Spectrum. Must be in good condition. Contact Simon Daniels on (0327) 843249 after 4.30pm

**AMSTRAD PCW9512** complete with software and daisywheel printer. Also Amstrad 464 and monitor, loadsa games, mags, manuals £175 Tel (0942) 215863

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**MSDOS DICTIONARY** program in compiled QuickBASIC enter Dosword from screen index to see syntax displayed. 5.25" disk £7.50 3.5" £9.00 J Davies, Radnage 5108

**AMSTRAD CPC 464**, original software for sale. Large SAE for list. Philip Howard, 82 Westwood Road, Greenham, Newbury, Berks, RG14 7TL

**TORCH CFM240** colour monitor double disk drive. Epson MX80FTII printer Wordstar Disk paper disks recently serviced. Phone 0733 233078 Price £250 ono

**COMPACT DISK player £50.** FX80 printer needs repair £50. BBC software 50p. Tel 0325 316009

**AMIGA AND C64 user** wants to swap the very latest demos on disk only. No disk = no reply! 0535 53669

**COMMODORE MODEM for Micronet**, complete with box and full instructions. Brand new. £30 ono. Ring 0482 836884 ask for Mike.

**ATARI 1040STFM** computer, mono monitor, Epson LX-800 printer, software accessories. Hardly used. £635. Tel: 01-748-7012

**ST GAMES for sale.** Outrun, Bombuzal, Sorcery+, Elite, Gauntlet 2. All for £40. Douglas Ramshaw, 24 Falconers Field, Harpenden, Herts, AL5 3ES

**SINCLAIR SPECTRUM +3** latest software Multiface 3 utility with manual and box. Lots of mags. No offers £200. Tel: Bristol 829357

**COMMODORE 1581 3.5"** disk drive suitable for C64 or C128 £100. Tel 061-624-7199

**FOR SALE: Snapshot 2.** Hardly used £15. Tel: Stoke-on-Trent 774600

**WANTED:- ST contacts**, possibly with modem. Contact Darryl, 17 Millpond Street, Ross-on-Wye, HFDS, HR9 7AP

**ATARI ST original games** all boxed and as new, top titles, 16 available, £65 the lot, may split, Broadstone 691306

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**OKI 83A wide carriage D/M printer.** Extra ribbon £50 inc P+P COD 0862-3728 65 Burgage Drive, Tain, Ross-shire IV19 1DW

**WILL SWAP MZ80K** computer + manuals tapes etc, for means to upgrade Atari 520STFM to 1 meg either cash or materials. 052-60308

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**C64/128 SOFTWARE** all original, disk and cassette, no rubbish, war games, adventures, all sorts, not just games. Ring 0268 696638 for list.

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**FOR SALE: Sega system**, 4 games boxed £70 phone 0450 87479 Mon-Thur after 7pm

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**THE ARCHON collection** for Amiga: Archon 1 and Adept (Archon II) £15. For Commodore 64: Project Stealth Fighter £8 contact: Angelo 0923 36571

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**WANTED: AMSTRAD 6128 firmware manual.** Phone 01-529-2073 and state your price.

**ARKHAM OPUS 01-952-5128.** All speeds. 24hrs. Files for ST, PC. Message areas for ST, PC, Shades, Psychology and more. 01-952-4493

**QUAD-SPEED MNP5 modem** 'HTEC2400' error correction data compression Hayes compatible many features (non Babt approved) bargain information ring Hi-Tec 0733-52440

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● A short and sweet games section this week, as we devote a whole spread to previews elsewhere. Some tasty releases nonetheless, with *Grand Monster Slam* threatening to kick the Beloms out of everything else. *Jack Nicklaus Golf* scores a hole in one with reviewer John McCleary, and *Raider* lends new thrust to an old formula

## JACK NICKLAUS GOLF

ACCOLADE

PC £24.95dk  
Also in C64



• Teeing up for a drive down the fairway

Boasting precision in gameplay and the finest greens on God's Earth, Accolade has come up with what's being touted as the ultimate in golf simulation.

### ● GAMEPLAY

Nicklaus, the undisputed master of golf etc etc, plays a useful part offering tips and comments on different holes chosen from all the best courses. Many of these are recognisable to avid TV golf freaks but mere pipe dreams for regular club swingers. Nicklaus has chosen the best from some fine courses.

Distance control is impressively accurate – if there's no wind and you make a good shot it will land where you had intended. But you have to contend with frustrating holes and difficult winds at times.

The putting greens are a wonder. None are too easy and, like 'the real thing', all need practice and concentration. Striking a birdie is difficult; coming away with an eagle is cause for celebration.

Accolade hasn't fussed around with a tedious manual. The whole thing is simple to get to grips with. As well as Nicklaus's favourite holes there are a couple of complete courses for variety.

### ● GRAPHICS AND SOUND

PC owners know better than to expect good graphics, and this is no exception. However, the whole thing is passable and key areas such as bunkers, rivers and the pin are easily recognizable. Even the black and white version poses no problems. The only down side is the long time it takes for screen updates. Not surprisingly (and thankfully) there's no sound to speak of.

### ● OTHER VERSIONS

As well as being available on the C64, you can also get an extra course disk for the PC and C64, price £11.95 and £8.95 respectively.

# GRAND MONSTER SLAM

GOLDEN GOBLINS/RAINBOW ARTS

Amiga £19.99dk  
Out soon on C64, ST, PC

German software house Rainbow Arts is famous for its brilliant – but totally unoriginal – titles such as *Katakis/Denaris* (reminiscent of *R-Type*), *Garrison* (Gauntlet) and *Great Giana Sisters* (*Super Mario Bros*). So is *Grand Monster Slam* just a scam with glam?

### ● GAMEPLAY

As with most original games, *GMS*' gameplay is deceptively simple, but totally addictive. A cross between football and crossfire, but unlike both!

The Grand-Slam-Tournament is an elimination contest, with you pitted against 7 other players (each one with their own strengths and weaknesses) – playing one at a time. The play area is a pitch, with your opponent at the top and you at the bottom. During play, you have to kick these furry fuzz-ball creatures (called Beloms) at your opponent – who tries to do the same back to you. If you get hit, you'll lose valuable kick-in time. Whoever manages to kick all the Beloms onto the opposing side, wins. Between each bout, there's one of two qualification rounds – then it's back to the action.

### ● GRAPHICS AND SOUND

As with most Rainbow Arts releases, audio-visuals are of a very high standard. The sprites are original, well animated and beautifully drawn, and are matched perfectly by the wonderful stadium backdrop,

INSTANT  
APPEAL



• About to face a barrage of Beloms



• Your motley gang of opponents

### ● EXPRESS VERDICT

Brilliant. A delightful mish-mash of wonderful holes, teasing shots and computerised accuracy.

★★★★

John McCleary

## RAIDER

IMPRESSIONS

Amiga £19.99dk  
No other versions announced yet

With ST owners able to play the classic *Thrust* and well renowned *Oids*, Amiga owners now have the chance to sample the same type of game thanks to *Raider* by Impressions.

### ● GAMEPLAY

Using a user-definable selection of keys, you use Asteroid-type control methods to fly your spacecraft over eight planet surfaces taking out any emplacements while avoiding collision with either landscape or projectiles along the way.

complete with its individually animated spectators.

The audio consists of a subtle little soundtrack on the title page and a satisfying selection of sampled sound spot-effects in-game.

### ● OTHER VERSIONS

Although we haven't seen the other versions yet, Rainbow Arts has told us the ST version is almost identical. We can't wait to get our hands on the other versions! Look out for an update shortly.

### ● EXPRESS VERDICT

*GMS* marks a terrific step forward for Rainbow Arts. It's got Arts' traditionally high standard of audio-visual excellence, only this time backed up by original, entertaining and plain old fun gameplay.

The only element that stopped us giving it five stars was the lack of a two-player option. Having said that, *GMS* provides instant appeal, a great deal of amusement, and is the sort of game you can go back to in a few months time and still enjoy playing. Don't miss this golden opportunity.

★★★★

Rik Haynes

### ● GRAPHICS AND SOUND

Of course, it's the gameplay that counts in this game, but even so the backdrops aren't that bad, and the sampled sound spot FX do an OK job.

### ● OTHER VERSIONS

No details at present.

### ● EXPRESS VERDICT

*Raider* marks an admirable debut release for software company, Impressions. Sure, it's not state-of-the-art, but it is playable and great if you're an Amiga owner looking for some *Oids* type entertainment.

★★★

Rik Haynes

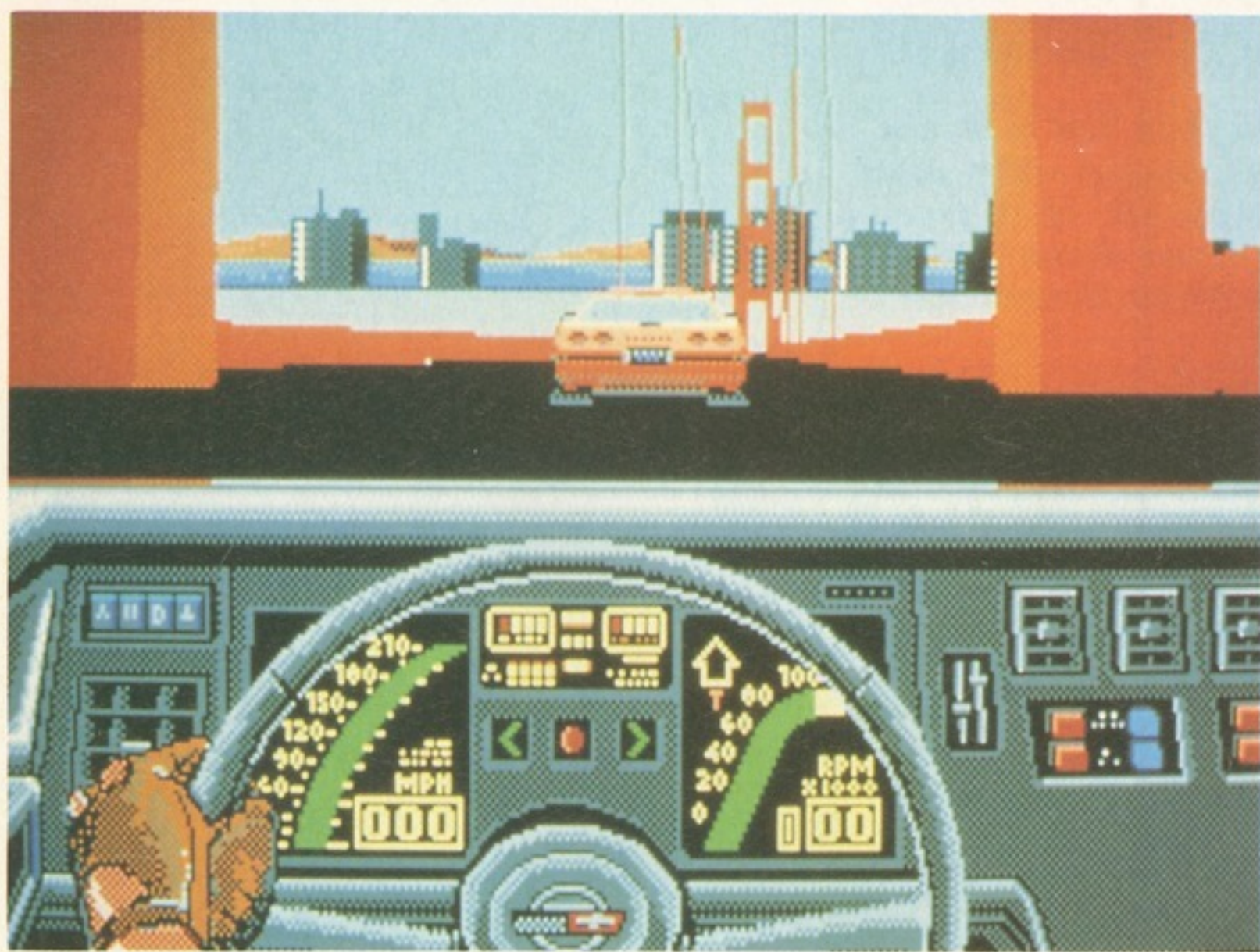


• Thrust/Asteroids/Oids all over again, but nice scenery



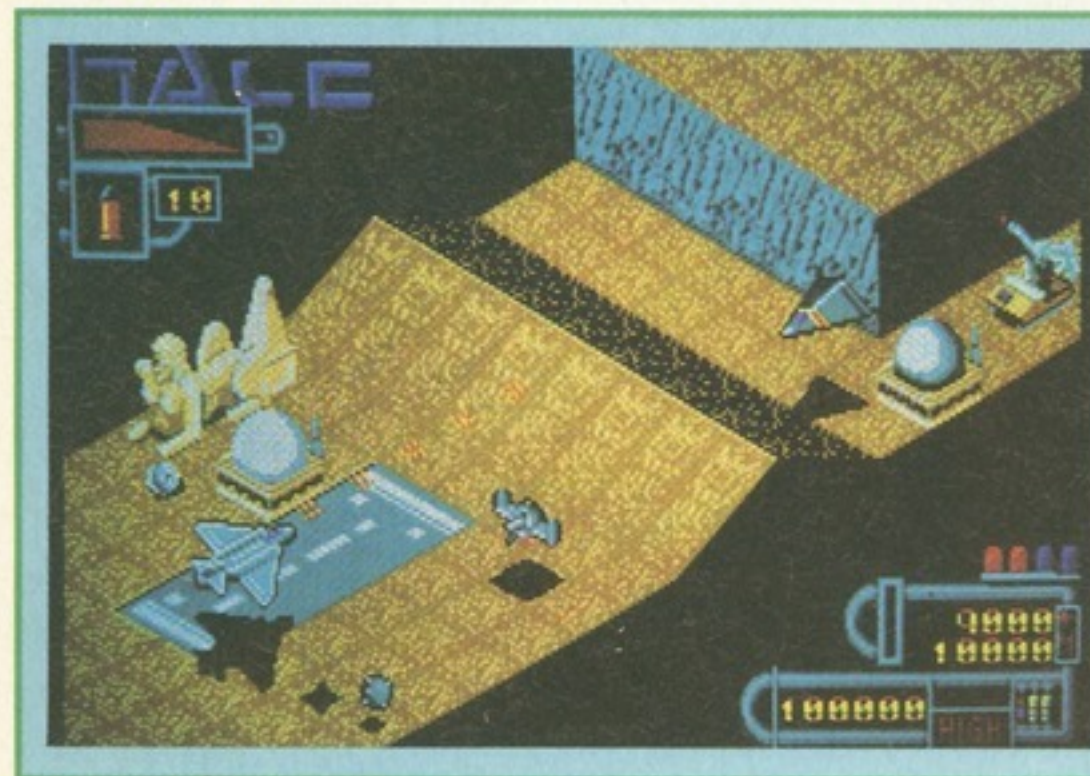
# LITTLE RED CORVETTE

*Rik Haynes takes to the streets of San Francisco while listening to Prince on the in-car CD...*



## VETTE! SPECTRUM HOLOBYTE/ MIRRORSOFT

After its award winning flight-sim *Falcon*, US software company Spectrum HoloByte is looking to repeat *Falcon's* success with its new racing-sim *Vette!* You're in the hot-seat of a Corvette, racing classic European sports cars – C5s, Skodas and Reliant Robins excepted – through the hilly streets of San Francisco. Out in summer on PC and Mac, with ST and Amiga versions due in the winter.

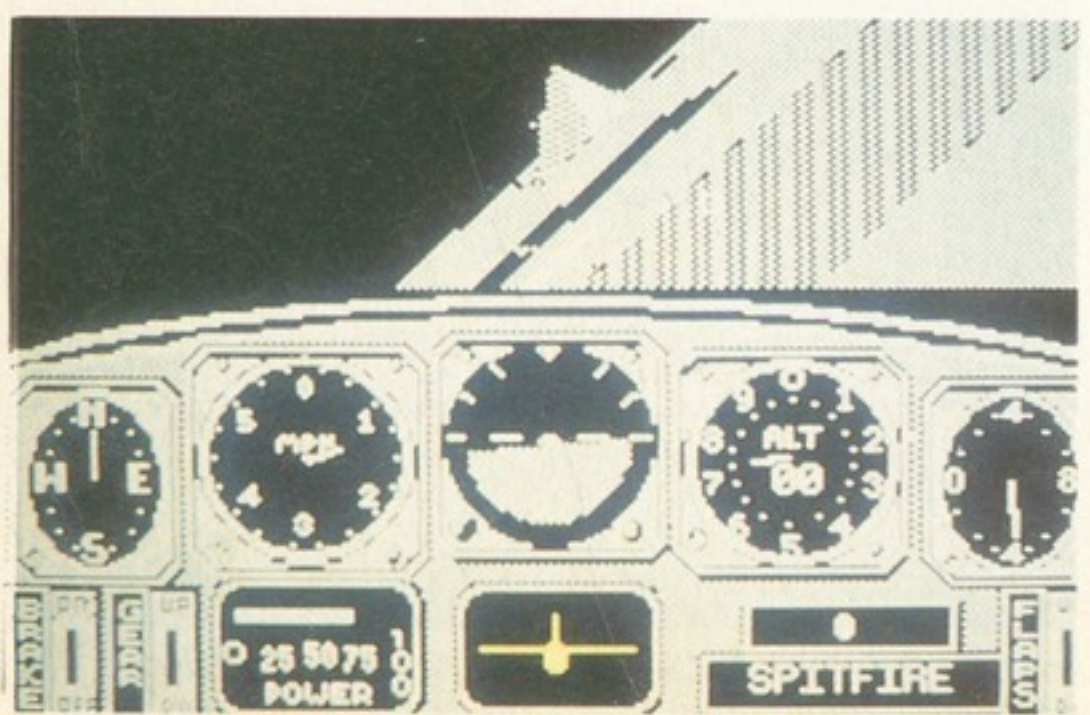


## HOSTILE ALL TERRAIN ENCOUNTER GREMLIN

Looking something like the classic pseudo-3D sideways shoot-'em-up *Zaxxon*, *Hostile All Terrain Encounter* splits your control between a Star Fighter and a Ground Assault Vehicle, in a mission to annihilate anything that moves (or stays still). Out next month on Spectrum, C64, CPC, ST and Amiga – so will you HATE it?

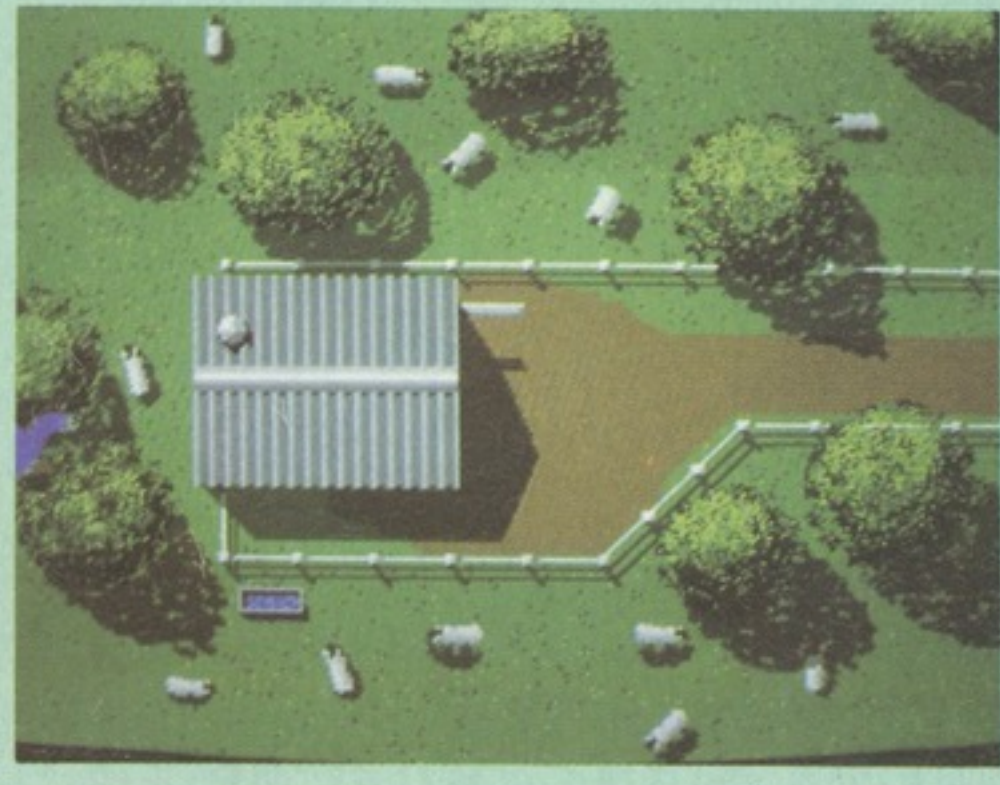
## CHUCK YEAGER'S AFT ELECTRONIC ARTS

This popular flight sim is due out on the Spectrum any time now. With the choice of flying a Cessna, F-15, F-16, SR-71 or Spitfire, which plane would you choose? Well there's no need to make a hasty decision because *Chuck Yeager* lets you fly all these well-known aircraft – and more besides – as you experience each one's strengths and weaknesses at first hand.



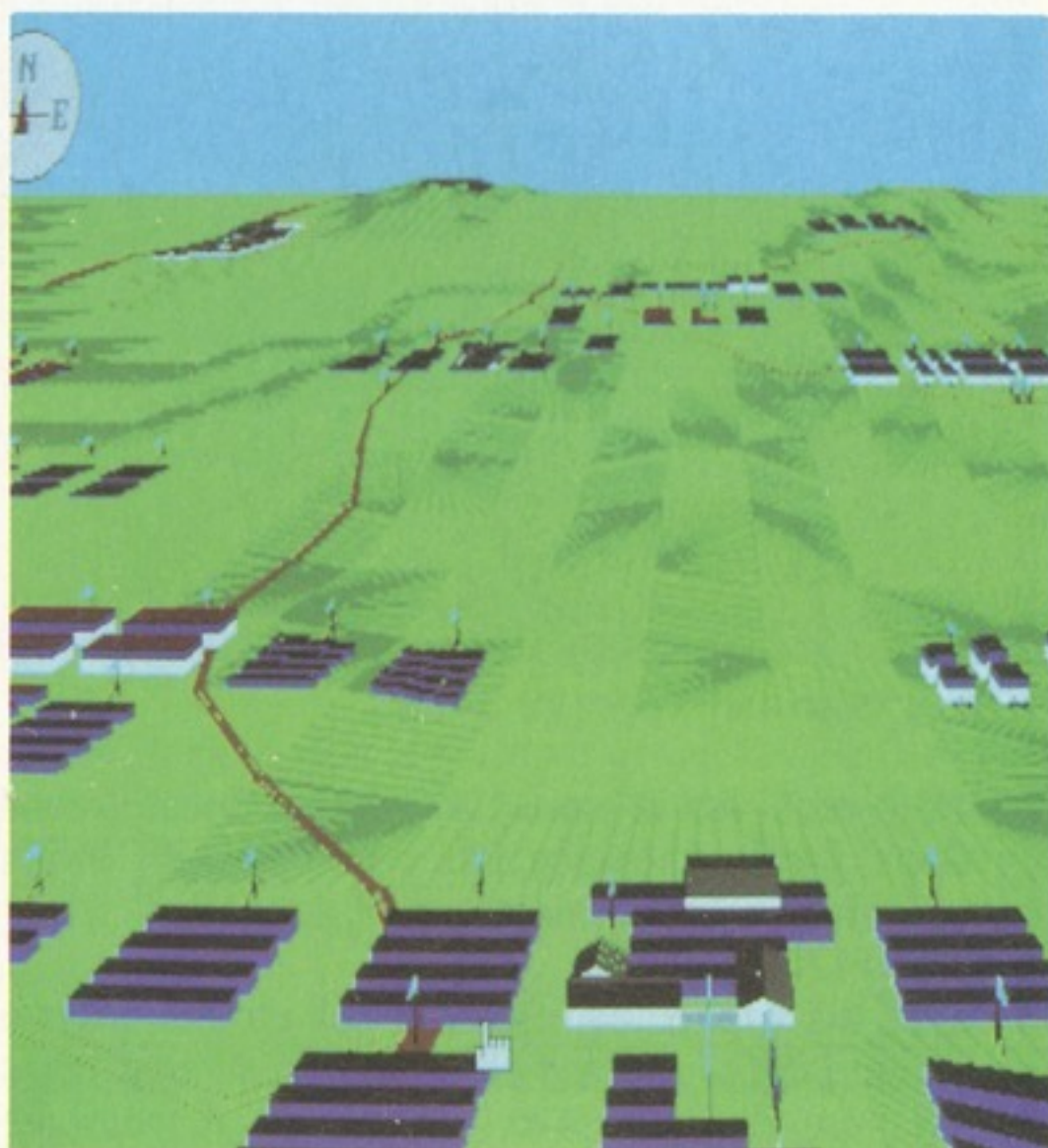
## THE LAST STUNTMAN ACTUAL SCREENSHOTS/CRL

What with Rainbow Arts' *Dangerfreak* (previewed in *Express* 15) and Codemasters' *Super Stuntman Simulator* (previewed in *Express* 23), it looks as though stuntman computer games are all the rage. *The Last Stuntman* is the first Hypermedia title, which can supposedly be played as a game, watched like a film or listened to like an album. Available shortly on ST and Amiga.



## WATERLOO PSS/MIRRORSOFT

If Atari's *Borodino* was to your liking, then the follow-up, *Waterloo*, should sit comfortably on your software shelf, as it's more of the same. Playing either Napoleon or Wellington in this wargaming simulation of the epic 1815 battle, you'll have complete control of your forces, with all the action represented by 3D static screens. *Waterloo* will be available shortly on Amiga and PC.



## STORMLORD HEWSON

This arcade adventure places you in the role of Stormlord, protector of the innocent and upholder of justice, as you wander the lands of Euphoria in your quest to de-throne the evil Queen – thus saving the

fairy folk from total annihilation. Originally by Raffaele "Cybernoid" Cecco on the Spectrum, ST and Amiga versions of *Stormlord* should be hitting the streets shortly.







## GOLD OF THE AMERICAS

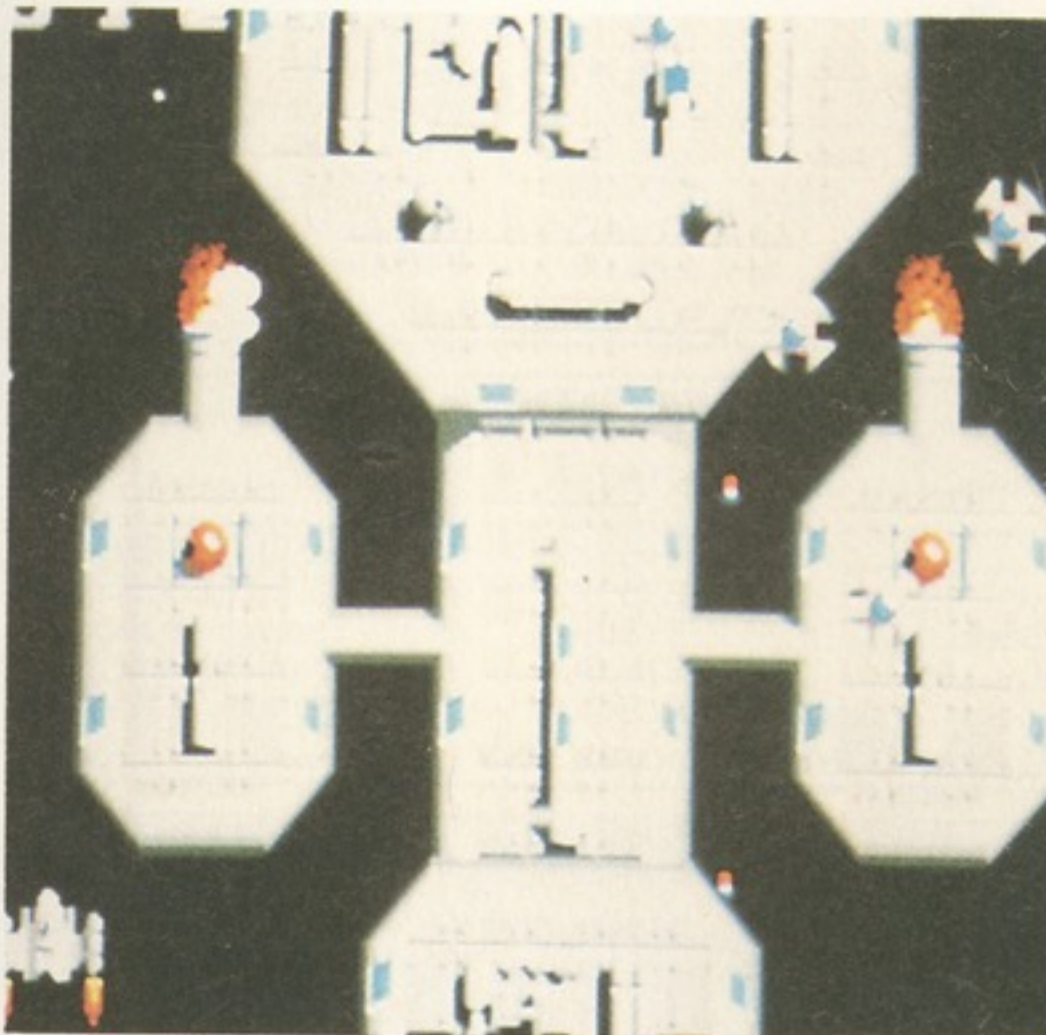
### STRATEGIC STUDIES GROUP/ELECTRONIC ARTS

*Gold of the Americas* is a one to four-player historic strategy game, seeing you involved in an expedition to conquer the New World of the Americas. Setting out from either England, France, Spain or Portugal, you'll have to master the seas, colonies and opposition if you wish to claim your right to rule. Due for release on the PC in early Summer.

## ALPHA MAX ONE

### WHITE PANTHER

*Alpha Max One* is the latest from unknown software company, White Panther, and is a scrolling shoot-'em-up based on some inane sci-fi story of the type you always find on the back of a game's packaging. As always, this screen shot is out of focus – how about getting a new camera guys? *Alpha Max One* is scheduled to be in the shops as you read this



## PANIC STATIONS

### GREMLIN

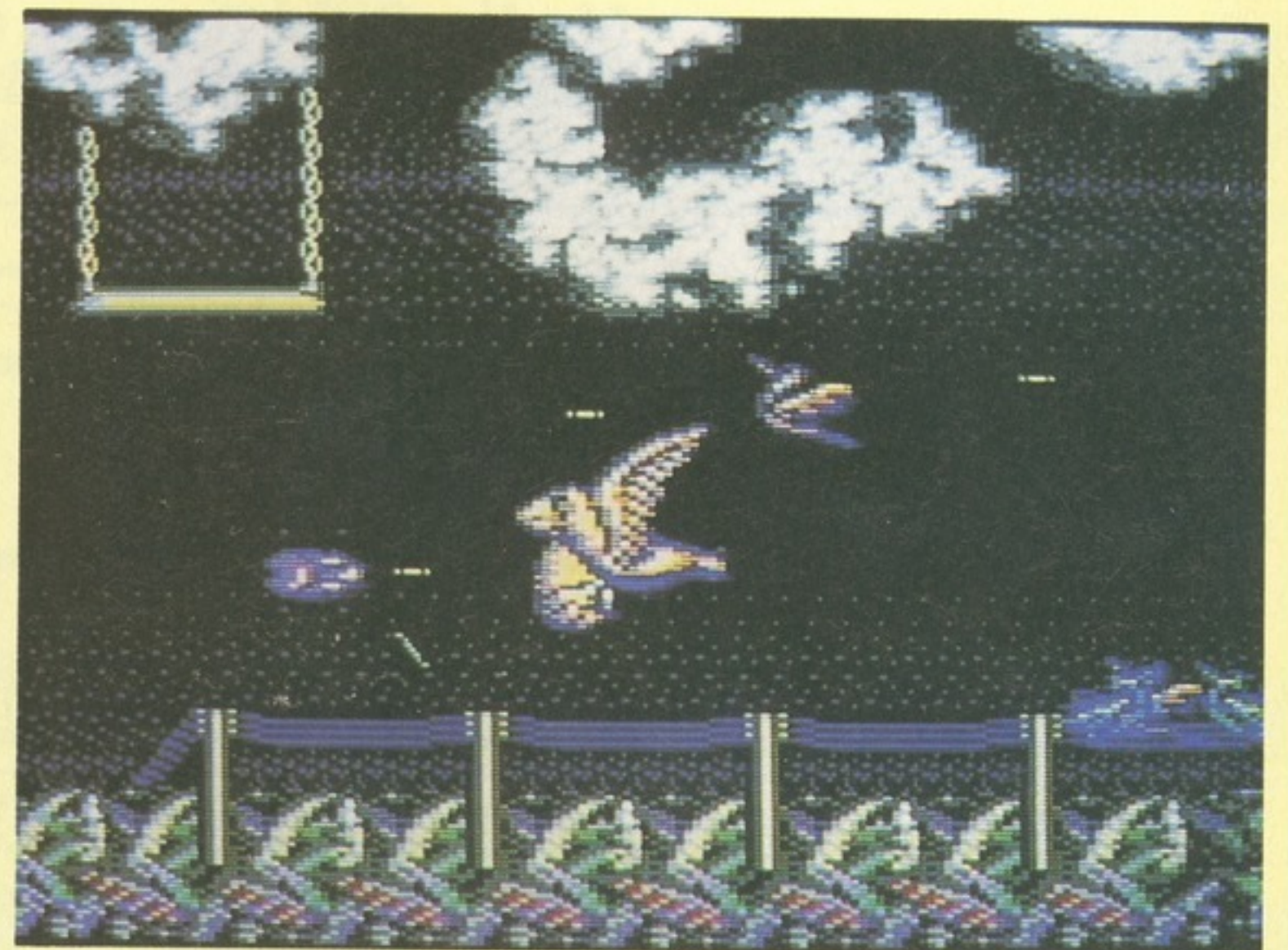
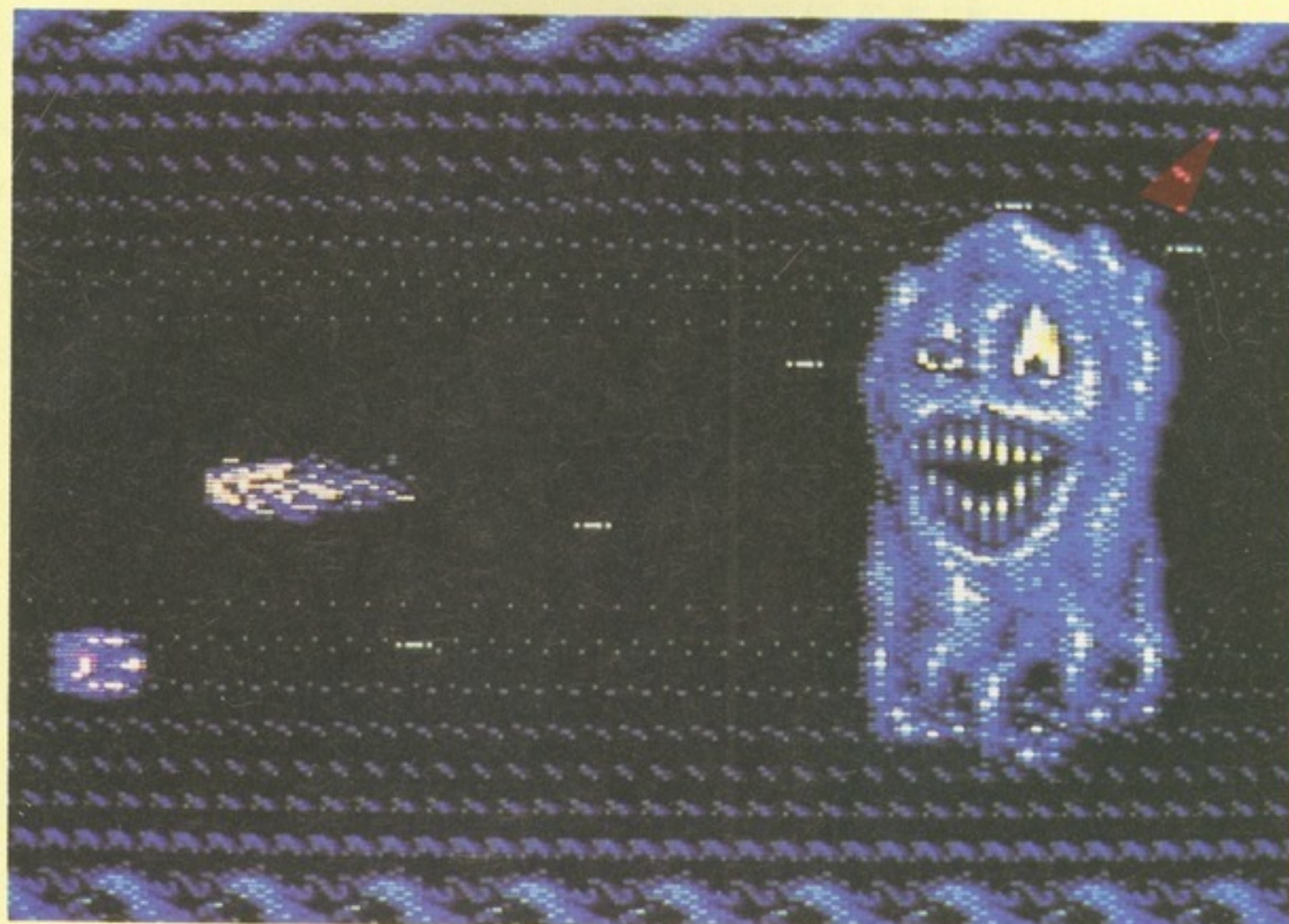
Don't panic! Don't panic! 'Cause you need nerves of steel in *Panic Stations*, for you're a robot in a space station looking for various escapee robots that are running amok throughout the complex. You'll have to watch your energy and ammo levels though, or you could become just another pile of scrap metal. Out next month on Spectrum, C64, CPC, ST and Amiga.

## PHOBIA IMAGEWORKS/MIRRORSOFT

Designed and programmed by the infamous team of David Bishop and Tony Crowther, *Phobia* is a horizontally-scrolling shoot-'em-up featuring new

techniques in scrolling programming, producing better colour scrolling on the C64 and 32-colour parallax scrolling on the ST and Amiga. *Phobia* will be coming

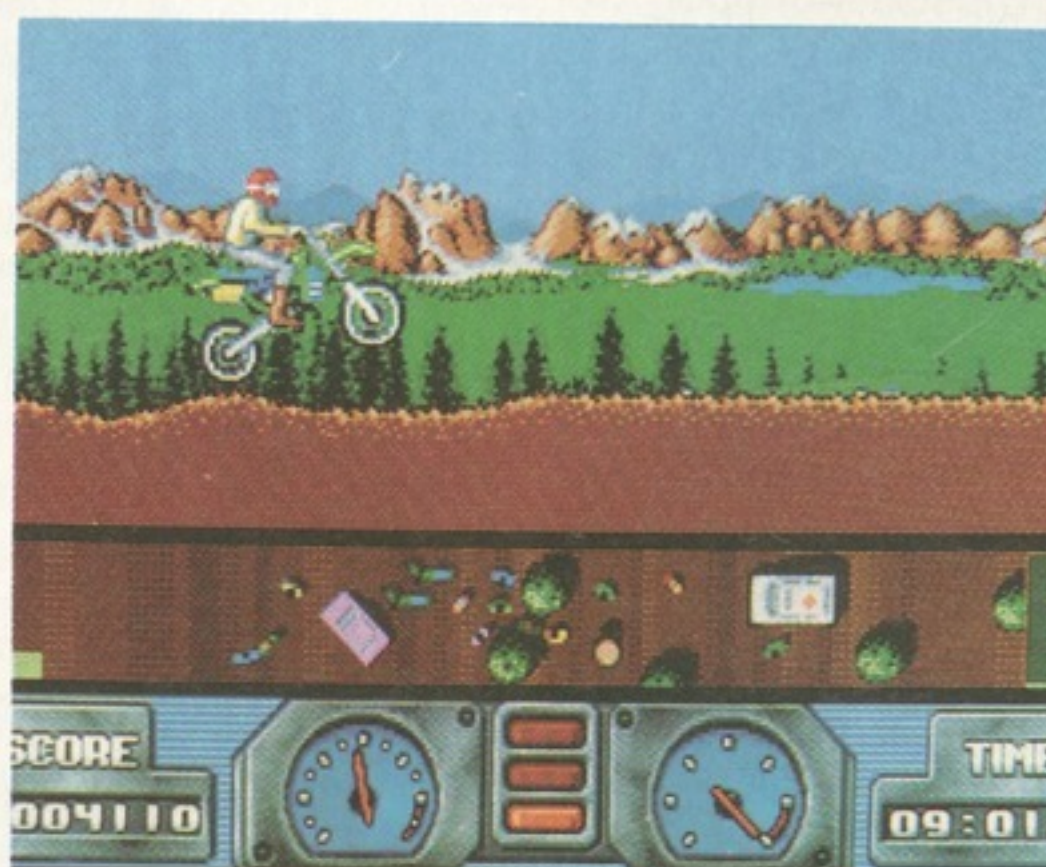
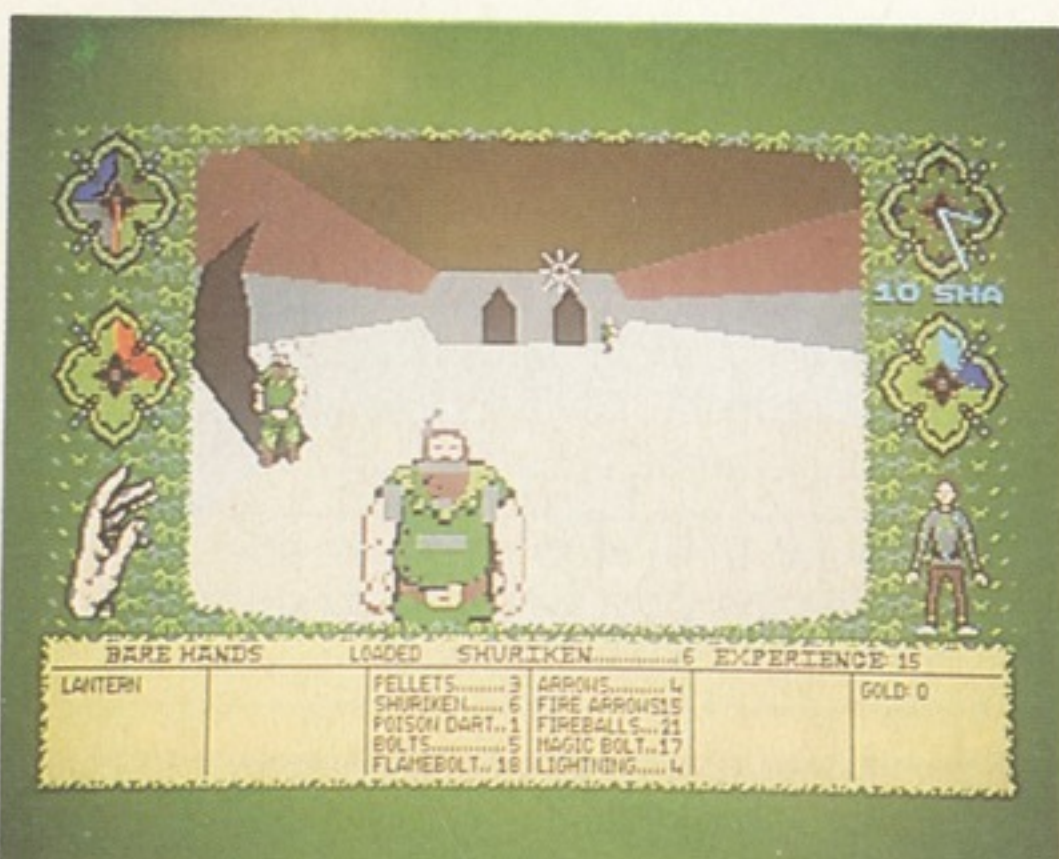
to a C64, ST or Amiga screen shortly, but there's nothing to fear unless you greatly dislike it.



## SLEEPING GODS LIE

### EMPIRE

The first release on the new Empire label, *Sleeping Gods Lie* is a role-playing arcade adventure featuring 64 different landscapes including mountains, deserts and catacombs, all populated by monsters ranging from giant mice to icy snowmen. *Sleeping Gods Lie* is due out on ST and Amiga shortly, with a PC version following in Summer. 8-bit versions are currently under consideration.



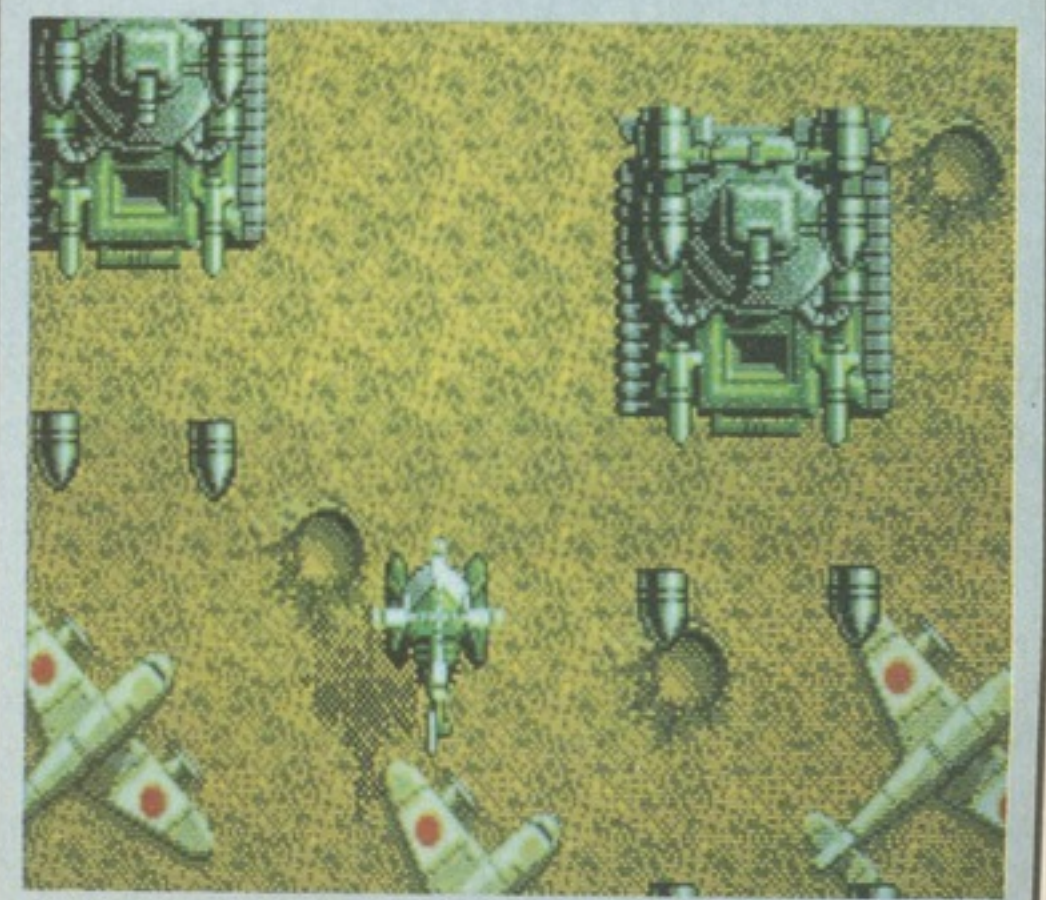
## SUPER SCRAMBLE SIMULATOR

### GREMLIN

Surprisingly not another Codemasters release, *Super Scramble Simulator* unsurprisingly simulates motorbike scrambling. Riding high and low on your cross country turbonutterscrambler, you'll encounter 1:2 gradient hills, rocks, logs, streams, and even the occasional spectator to mow down as you race to the finish line. *Super Scramble Simulator* is due for release next month on Spectrum, C64, CPC, ST and Amiga.

## APACHE STRIKE EXOCET

Flying a helicopter in this scrolling shoot-'em-up, you'll encounter enemy ground-based gun emplacements, bombers, tanks, troop carriers and even other choppers as you wade through the opposition at full turbine speed. You'll also be able to pick up extra weaponry to help you in your frenzy of destruction. Out in July on ST and Amiga from the makers of *Foundations Waste* and *Hyperdome*.





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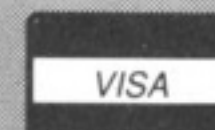
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# Computer chaos

Exerpts from Mel Croucher's encyclopaedia of electronic errors

## Kingston upon Thames

The local library is rightly proud of its computerised bar code system, and believes that the cost of over £10,000 is fully justified. Mr Peter Dalton, head of Beverley School Sixth Form examines the system, duplicates it and makes a few improvements for his own use, including a real-time clock, a computer-generated bar-code writer and assorted friendly on-screen greetings. The cost of the complete improved system? Fifty-five quid.

*Times Education Supplement*

## Dearborn, Michigan

Fourteen thousand new Lincoln Continental Mark VII limos are quietly recalled to the Ford motor plant because of a lethal fault. The car's computerised air suspension system should switch itself off once the vehicle has been parked in its garage, but instead it sends out an electronic pulse. This causes relays to stick open, and overheats a main electrical wiring loom. The result? The cars set themselves on fire and explode. Among the first victims of garages reduced to ashes are two executives of the Ford Corporation

*Newhouse News Service*

## Etampes, France

November 1979. Three men in jeans and leather jackets driving a Peugeot on Route-20 at 10pm. They stop for petrol. The garage attendant is suspicious of the home-made number plate 3383FM13, and phones the cops to report a 'suspicious car'. The Etampes police computer confirms that 3383FM13 is a stolen vehicle, and the goon squad sets off in pursuit. They intercept the men and manage to shoot Monsieur Claude Francois directly between the eyes with a .357 Magnum. The cop is not arrested, because the police computer told him that Francois was a criminal. Unfortunately, 3383FM13 was stolen in 1976, and Francois bought it legally ten days before he was shot.

*Graham Allen Research*

## Paramus, New Jersey

A Superior Court judge rules that computers are unnecessary. Under a 1957 Sunday Trading embargo, 'worldly employment or business, except works of necessity or charity' are banned on the sabbath. Local businesses plead that they need to keep their machines running seven days a week, but the judge declares that God doesn't agree with computers.

*San Francisco Chronicle*

## Newsweek Magazine

Richard Sandza is an American journalist. On November 12th 1984

he writes a scathing article on hackers. In retribution, the TRW credit information service is hacked and Sandza's credit card numbers are extracted and posted all over national bulletin boards. He is relieved that he discovers the break-in after only \$1100 gets clocked up in unauthorised charges, until he discovers that his home computer is now under the control of a network of external dial-ups.

*Richard Sandza*

## PACE (The Journal of Heart Pacemaker Patients)

In the United States, the new generation of pacemakers can be monitored by patients dialling up a diagnostic service once a month, and transmitting a digital sequence. The manufacturers declare that there is no possible electronic communication that can interfere with this process. They have obviously forgotten what happened when the original Sputnik orbited the Earth opening and closing garage doors with its transmissions. The first victim is a gentleman undergoing microwave arthritis therapy which reprograms his heart and kills him. The latest concerns an ongoing litigation after a shopper is murdered by an in-store anti theft device.

*Nancy Leveson, Software Engineering Notes*

## Chicago, Illinois

Joe Pistrutto's cement factory commissions a distribution control system based on antique 8080 processors and defective MOSTEK RAM chips. When the conveyors inevitably foul up, large boulders build themselves into an eighty foot mountain. After half an hour or so, the operations controller gets fed up with the dull thuds coming from the street, and looks out of the window. The system seems to feel somewhat guilty, and having written off eleven cars and one building, it promptly commits suicide by starting up the conveyor belt and crushing itself to death.

*Joe Pistrutto*

## Ministry of Defence

'Reliable Sources' within the MoD report that their Apple Macs have been infected with a right-wing virus. The Ministry uses the Macs for graphics, but a few of them are also employed for word processing, and whenever the words 'Prime Minister' or 'Margaret Thatcher' are input, the document vanishes and a picture of Maggie fronting the Union Jack appears. The MoD has not yet found a cure. Neither has the British voter.

*Will Martin, Software Engineering Notes*

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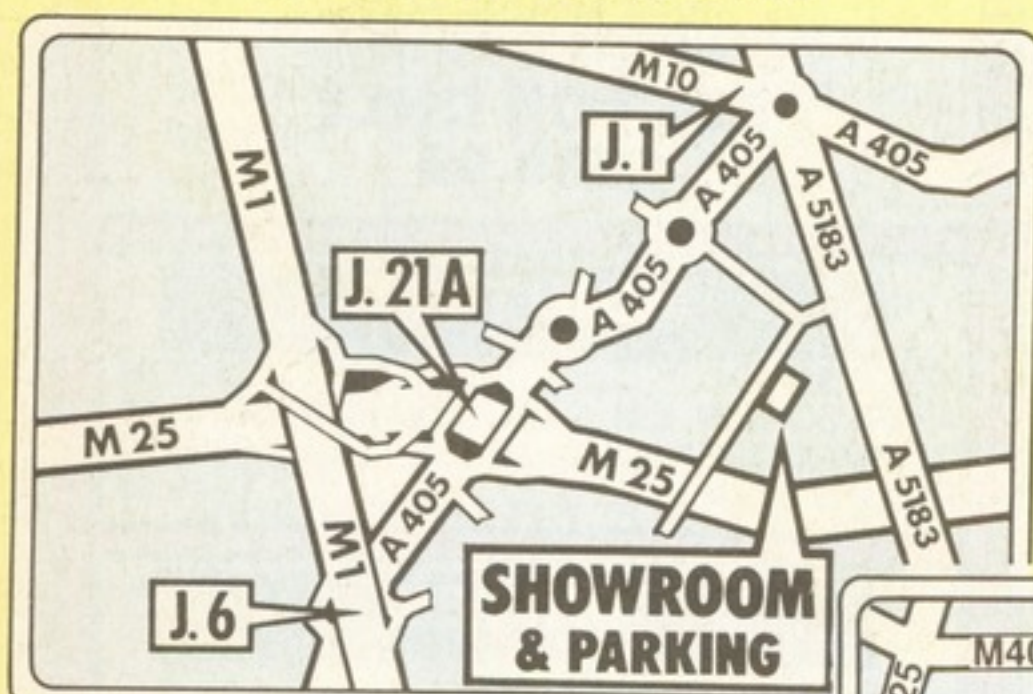
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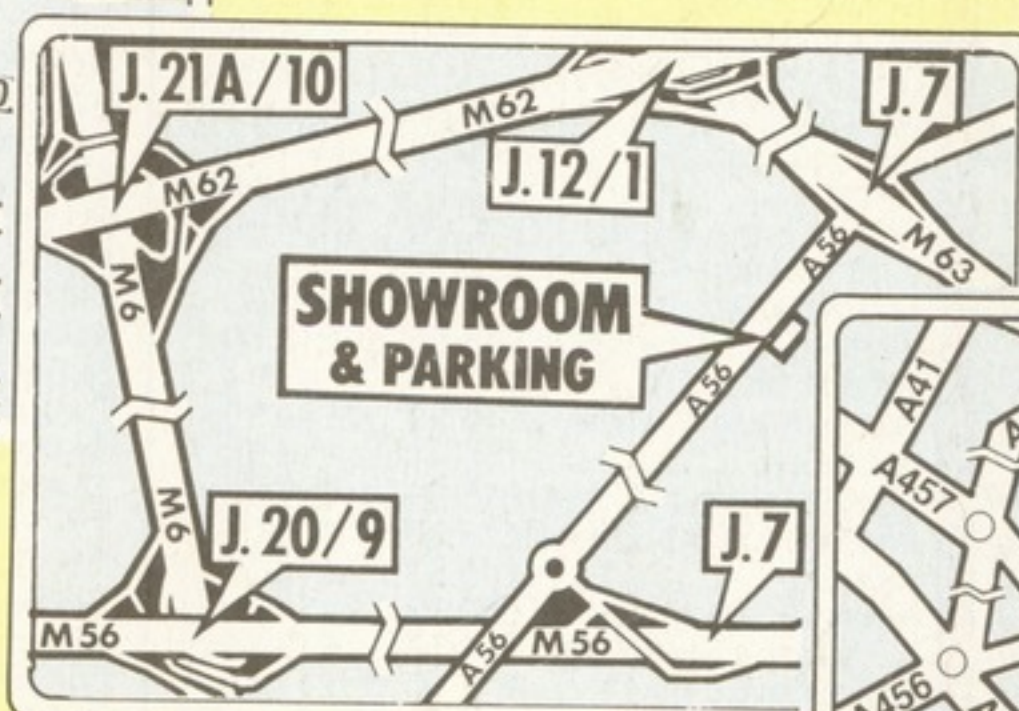
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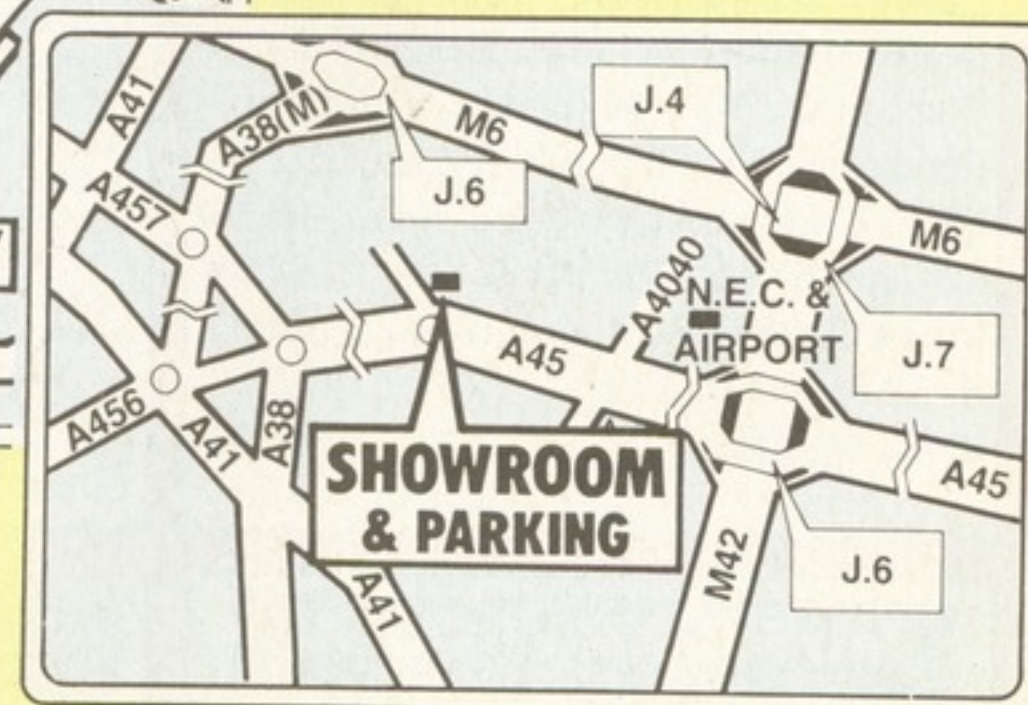


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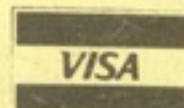
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